Illinois U Library

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The IRON AGE

OCTOBER 23, 1947

STEEL PLATES

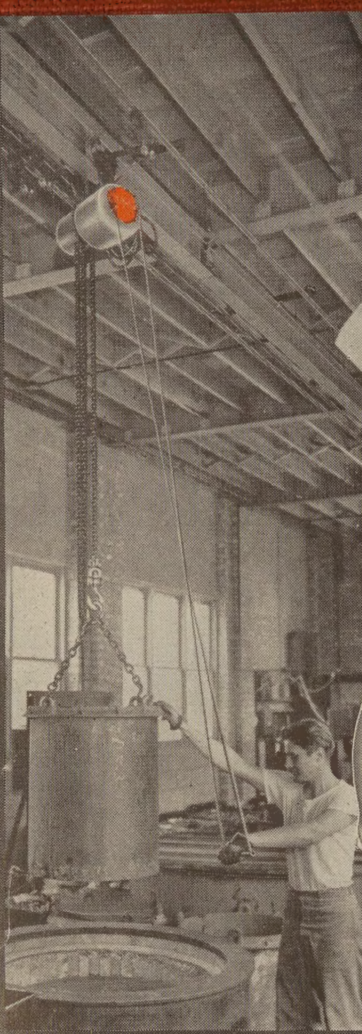
STEEL PLATES
WORTH

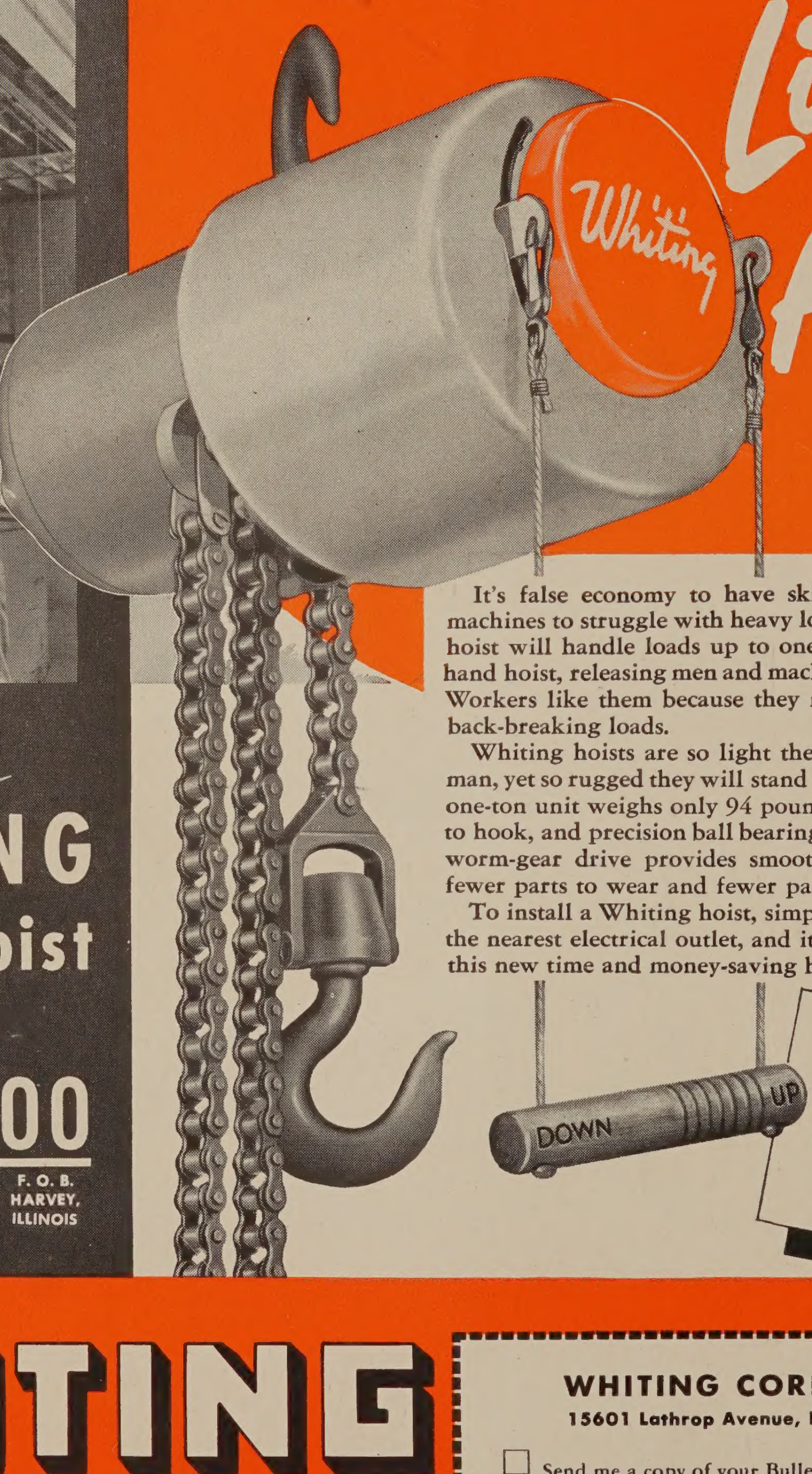
FLANGED AND DISHED HEADS

WORTH STEEL COMPANY • CLAYMONT, DELAWARE

YOU CAN'T AFFORD TO

Lift by Hand





It's false economy to have skilled workers leave thei machines to struggle with heavy loads. The Whiting electri hoist will handle loads up to one-ton 13 times as fast as hand hoist, releasing men and machines for productive work Workers like them because they make it so easy to handl back-breaking loads.

Whiting hoists are so light they can be installed by on man, yet so rugged they will stand up under heavy duty. Th one-ton unit weighs only 94 pounds. It has steel from hoo to hook, and precision ball bearings throughout. Its compac worm-gear drive provides smooth, silent power, and ha fewer parts to wear and fewer parts to adjust.

To install a Whiting hoist, simply hang it up, plug it int the nearest electrical outlet, and it's ready to go. Investigat this new time and money-saving hoist.

If It Saves On Man 12 Minutes a Day...IT PAYS A PROFIT!

The WHITING Electric Hoist

Costs Only

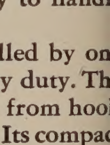
$230 00 F. O. B. HARVEY, ILLINOIS

WHITING

ELECTRIC HOISTS

¼, ½, and 1-Ton Sizes

WHITING CORPORATION
15601 Lathrop Avenue, Harvey, Illinois



☐ Send me a copy of your Bulletin H-100A describing the new Whiting electric hoist.

☐ Please send me the name of the Whiting distributor in my ter tory who can give me immediate delivery on a Whiting hoi

NAME______________________________

ADDRESS______________________________

CITY____________________ STATE__________

Announces

Two new instruments for saving production time and materials

Here are two new G-E quality-control instruments. Like all G-E testing and measuring equipments, they have been proved in our laboratories and on our production lines.

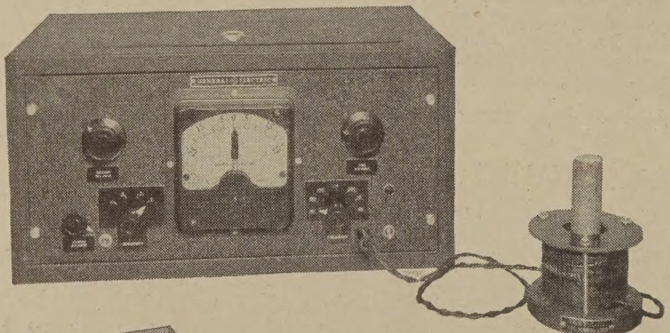
Good quality control means a saving in hours and dollars to you. Cutting down such waste as avoidable trimmings or excessive rejects can mean big savings to you over a year's period. For help on such individual quality-control problems, state your request in detail. Our engineers can pick from hundreds of equipments to help you with quality control. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

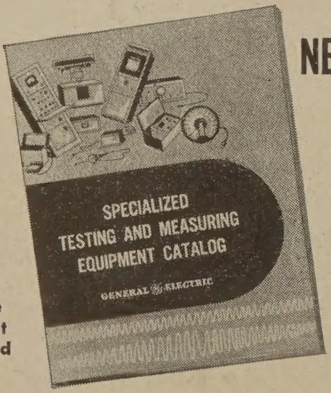
HAND TACHOMETER SIMPLIFIES SPEED MEASUREMENT

The new hand tachometer gives you quick accurate speed indication at low cost. You can adjust the speed of such equipments as motors, cutting lathes, and other machinery to obtain the best operating conditions. Covering an unusually wide range, it weighs only seven pounds. Machinery users and manufacturers both find this new tachometer useful. Write for Bulletin GEA-4895.

METALS COMPARATOR SEPARATES METALS QUICKLY

The new metals comparator sorts metals on basis of chemical composition and heat treatment. Useful for both magnetic and non-magnetic metals. It's portable, economical with an easy-to-read scale. Saves money in metals stockroom by identifying mixed metals. Reduces cutting tool losses by separating machinable from non-machinable metals. Permits rapid inspection—1200 to 1500 parts per hour. Write for Bulletin GEA-4894.





This new Specialized Measuring and Testing Equipment Catalog contains 44 pages of the latest developments in measuring and testing equipment, giving application, description, specifications, photographs, prices and how to order. Here, in easy-to-use form, is assembled information on approximately 100 equipments. If you can use a catalog of this type, fill out the coupon completely and send it today.

NEW FREE CATALOG for REFERENCE and ORDERING

Apparatus Department
General Electric Co., Section A800-38
Schenectady 5, N. Y.

Please send me the new SPECIALIZED MEASURING AND TESTING EQUIPMENT CAT., GEA-639.

Name ____________

Company ____________

Position ____________

Street ____________

City ____________ **Zone** ______ **State** ____________

GENERAL ELECTRIC

LEATHER BELTING

SCHIEREN FLAT BELTING — specially tanned to transmit more power — last longer. Available in all sizes to meet all regular and special requirements of service.

SCHIEREN LEATHER V-BELTING — Supplied in 100 foot rolls in A, B, C, and D sections. Full grain side walls for extra grip. You can make any desired length at a moment's notice. Also made in smaller sizes for fractional horsepower drives.

LEATHER PACKINGS

Schieren packings are accurately made from specially tanned packing leather. For Hydraulic, Pneumatic, High Pressure and Low Pressure and high temperature service.

LEATHER SPECIALTIES

Made by Schieren to fit your individual requirements, from leather that suits the purpose best. All types, straps, pickers, aprons, discs, clutches, etc.

For complete details on these products write to

CHAS. A. SCHIEREN CO.
36 Ferry St., New York 7, N. Y.
60 Front Street, W., Toronto, Ont.
Branch Offices in Chicago, Dallas, Denver, Detroit, Lowell, Newark, New York, Philadelphia, Pittsburgh, Salt Lake City
Tanners and Manufacturers Since 1868

SC-15

Fatigue Cracks

BY C. T. POST

Smut

• • Many an American industrialist, wallowing in technical magazines, claims he had no time to read even publications that would needle his plant's production efficiency considerably. In Britain, the wizened technical press, gasping for paper, presents no such problems. The highly respected "Foundry Trade Journal" of London devotes 16 lines of its August 21 issue to the revolutionary Wetherill vacuum casting process and winds up in a pet of frustration with:

> *"This is the type of information with which we should like to have dealt more fully, but paper supplies nowadays seem to be especially reserved for Government publications and the pornographic press."*

In its August 14 issue, your favorite family journal devoted four slick, lavishly illustrated pages to the Wetherill process. Let's cuddle, "Snappy Stories."

Brainstorm

• • Employee suggestion contests have aided in no small way the lubrication of America's mighty industrial machine. Looking over a list of winners at the Glenn L. Martin Co. we find that Anthony T. Melfa was cited for a method of reworking part number 10-2000294-30: Francesco Perrelli for threaded locating pins to support contour templates; and Stewart R. Vickery for suggesting that a cigarette butt receptacle be placed in the airport administration building.

Rock of Ages

• • Note to American Association of Advertising Agencies: If you're looking for something to offset the impression spread by that insidious book and movie, "The Hucksters," that advertising agencies are brassy, venal glitterboxes, you should contact John Huggett, THE IRON AGE, Pittsburgh. He reports that Wearstler Advertising, Inc., Youngstown, Ohio, occupies the same building with the Trinity Methodist Church. No doubt choir music in the background provides heavenly inspiration while advertising copy is being prepared.

Indomitable

• • Not all tea talk in Britain is of nationalization and crisis, we learn from our Washington editors. Never one to miss a scoop, George Baker somehow crashed a tea at the Washington Women's Press Club for Lady Inverchapel, the Ambassador's new wife. With notebook poised, George sidled up to Her Ladyship, smiled ingratiatingly and murmured "Lady Inverchapel, would you care to comment on the iron and steel situation in Britain?" Establishing herself as the first dignitary in Washington to be without a ready statement on this subject, she seriously replied, "I'm sorry, Mr. Baker, but I'm afraid that I'm too full up with woman-talk to discuss the situation intelligently at the moment." It was a good try, George, anyway.

Where There's Smoke

• • Without a doubt the locomotive stacks of the Harlem Division of the New York Central emit more and blacker smoke psi than any in the world. This has been driven into our noggin regularly each Monday by the little woman as she takes in the sheets from the back yard, hard by the tracks. But that doesn't settle the question, more to the point in the pages of your favorite family journal, as to which industrial stack is the world's tallest.

Bob Reinhardt, who effervesces weekly in the West Coast column, retains his California booster button by quickly nominating the lead smelter stack of American Smelting & Refining Co. at Selby, on the shore of San Francisco Bay. This brick chimney points some 325 ft towards heaven, avers Bob. But privately, when the Chamber of Commerce isn't eavesdropping, he allows as how one of the Anaconda stacks at Butte, or Eastman stacks at Rochester, might edge out Selby by half an inch or so.

The answer isn't in Dr. Willet's Homebody Almanac, by which we make our most important decisions. Who knows which stack IS tallest?

Smuggled Time

• • Anyway, it's nice to know that the Government is frank about these things. Part of the latest Treasury Department report on import duties is carefully labeled "Apparent Consumption of Watches by Type". A footnote reference on imported watch movements explains the "apparent":

> *"Measured by number of movements reported. Figures understate actual imports by unknown smuggled amounts."*

Here's our own personal footnote: A division of the Treasury Department, the Customs Bureau, is responsible for apprehending smugglers.

We've made the "ROUNDS" for 60 years

Perhaps OUR experience can help YOU!

Yes, for more than a half century, Gisholt has specialized in the field of round and partly round parts . . . building equipment to produce them . . . helping others to use it most efficiently.

Gisholt engineers concentrate on these machine shop problems, visiting hundreds of plants each year to help solve hundreds of problems. They will gladly help you.

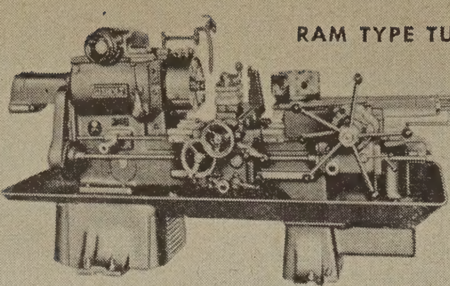
If you have operations in your plant which you think might be improved, we invite you to make use of this experience through the Gisholt Round Table—a clearing house for practical ideas.

Now, and in the years ahead, more emphasis than ever will be placed upon better methods, increased efficiency and lower costs. Be sure you have the best methods and equipment. It pays to "Look ahead—keep ahead—with Gisholt."

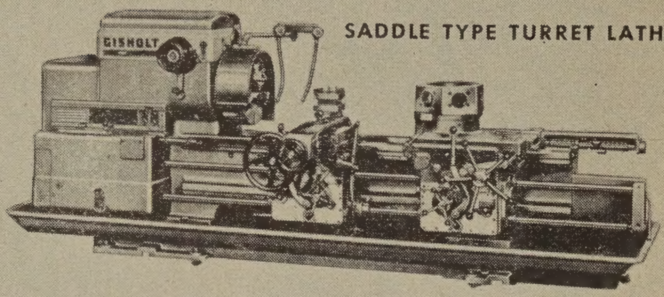
GISHOLT MACHINE COMPANY
Madison 3, Wisconsin

The GISHOLT ROUND TABLE

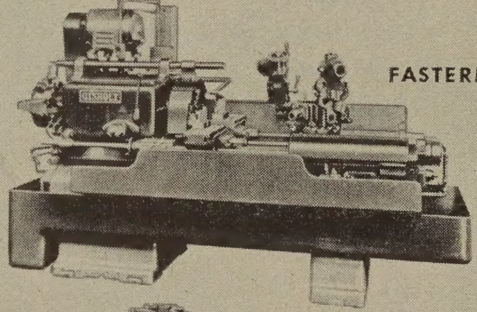
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.



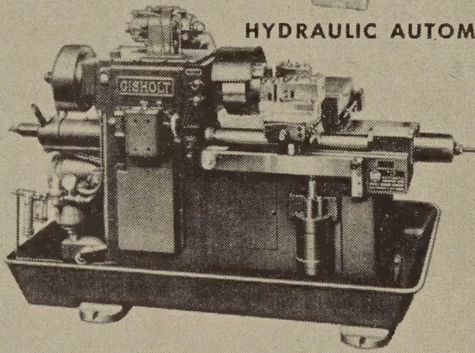
RAM TYPE TURRET LATHES



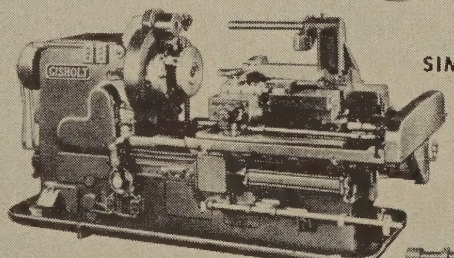
SADDLE TYPE TURRET LATHES



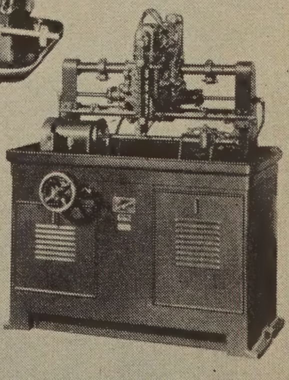
FASTERMATIC



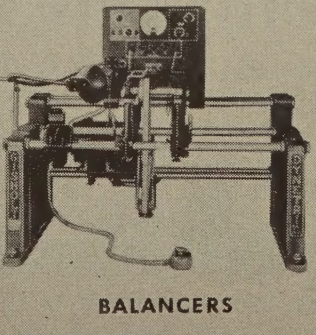
HYDRAULIC AUTOMATIC LATHES



SIMPLIMATIC



SUPERFINISHERS



BALANCERS

URRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

TRIPLEX
for Toughness

Tough, TRIPLEX Cap Screws, in sizes up to 1" diameter and 8" long, are made to stand the pounding of today's high speed equipment. You can depend on TRIPLEX in the "pinches". They have that *extra* toughness that gives strength when strength is needed most.

Of course they're available in all four heads—Flat, Hex, Fillister and Button. A turn to TRIPLEX is doing yourself a good turn. Write for new illustrated catalog with complete listings of all TRIPLEX threaded fasteners.

THE TRIPLEX SCREW COMPANY
5309 GRANT AVE.
CLEVELAND 5, OHIO

TRIPLEX THREADED FASTENERS
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

Dear Editor:

TRANSPOSED CAPTIONS

Sir:

As you know, the steel industry has appropriated a considerable sum of money in an effort to obtain a better understanding on the part of the public with regard to the real facts concerning the industry. One of the most important questions under discussion at the moment is, of course, the matter of the relationship between capacity and demand and this phase of the problem is being grossly misinterpreted by many advisers to our government. It seems particularly unfortunate just at this moment to have a cartoon such as that appearing on p. 113 of the Sept. 25 issue which gives exactly the opposite meaning to what are the real facts concerning the attitude of the government. Evidently, the captions under the cartoon were inadvertently transposed.

EDWARD L. RYERSON
Chairman of the Board

Inland Steel Co.
Chicago

● It is most regrettable that the captions were transposed, in the last minute rush of publication. We were purposely trying to offset a grossly misinterpreted capacity problem.—Ed.

ALUMINUM BILLETS

Sir:

We would like to receive a copy of the article, "Casting Aluminum Billets for Extruding," by R. W. Graham in the Dec. 26, 1946, issue.

A. J. TROMMERSHAUSEN
Development Engineer

Permanente Metals Corp.
Tacoma, Wash.

SHOVEL HANDLES

Sir:

One of our clients abroad who manufactures shovels has asked us how we put the double bend in long oak shovel handles. He tells us he has tried steaming the blanks and put them into dies and has formed jigs to produce the bend but in every case the fiber of the oak has failed, and he has broken handles only. We will appreciate any information you can furnish us which will enable us to help him with his problem.

S. B. SEMENOFF

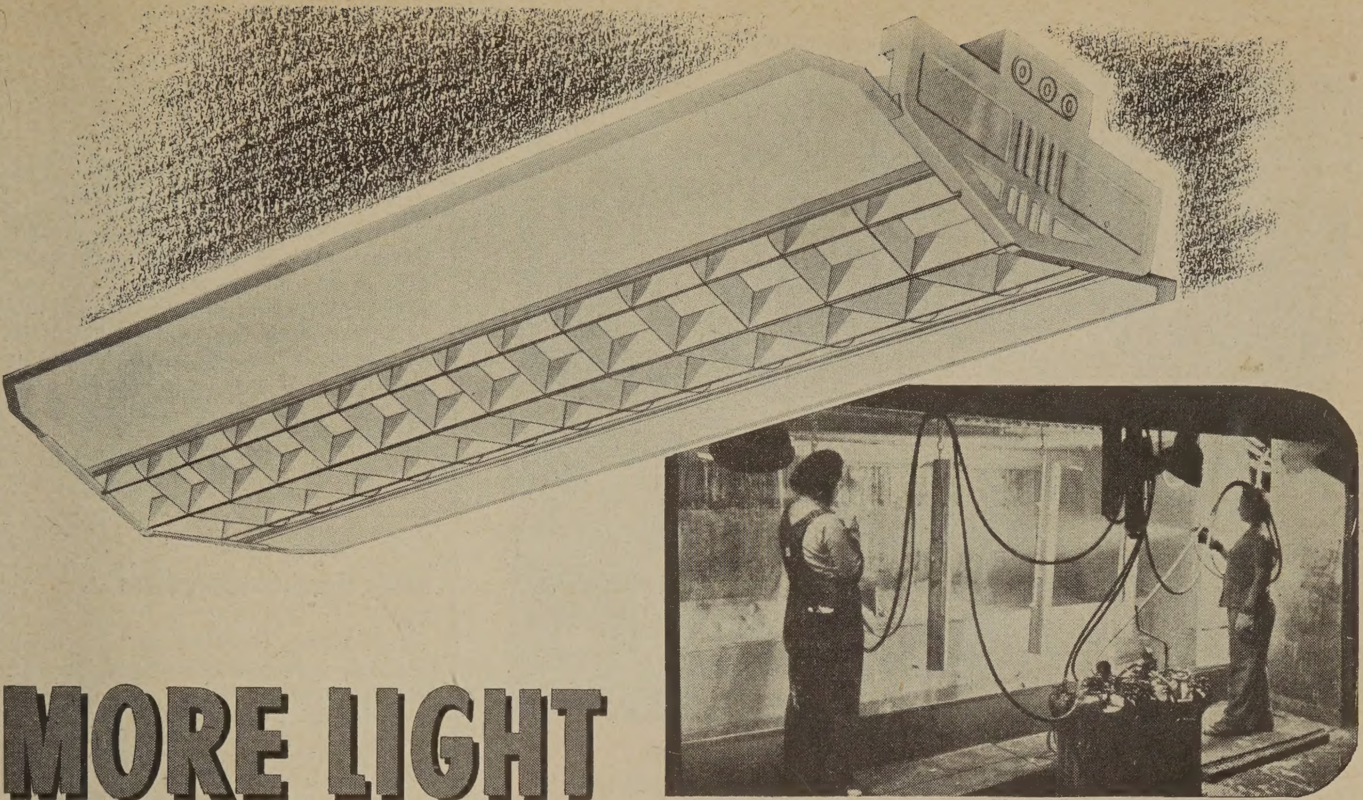
F. H. Crawford & Co., Inc.
New York

● Can one of our readers help with this problem?—Ed.

STEEL SUPPLY ANGLES

Sir:

I would like to have six copies of the Special Report published on p. 287 of the Sept. 11 issue, dealing with the scrap and steel situation. The article is very interesting and we agree with you that there is a high percentage of



MORE LIGHT *on the advantages of* REPUBLIC ELECTRO PAINTLOK

—and it comes from a manufacturer of lighting equipment who uses this chemically-treated, zinc-coated steel sheet extensively in the manufacture of fluorescent fixtures.

He reports:

1. That ELECTRO PAINTLOK provides an excellent surface for 300° white baked enamel—that it produces a chip-proof, crack-proof finish that will not peel or craze.

2. That it protects against rust during storage in a high humidity area.

3. That it eliminates the need for pre-paint cleaning with a degreasing fluid—eliminates extra pickling for storage and recleaning before use.

4. That it is easy to handle—to fabricate—to weld.

Do you make a sheet steel product requiring painting, lacquering or enameling? Then you should learn more about Republic ELECTRO ZINC PLATED SHEETS—how they improve products—and how they cut costs. Write to:

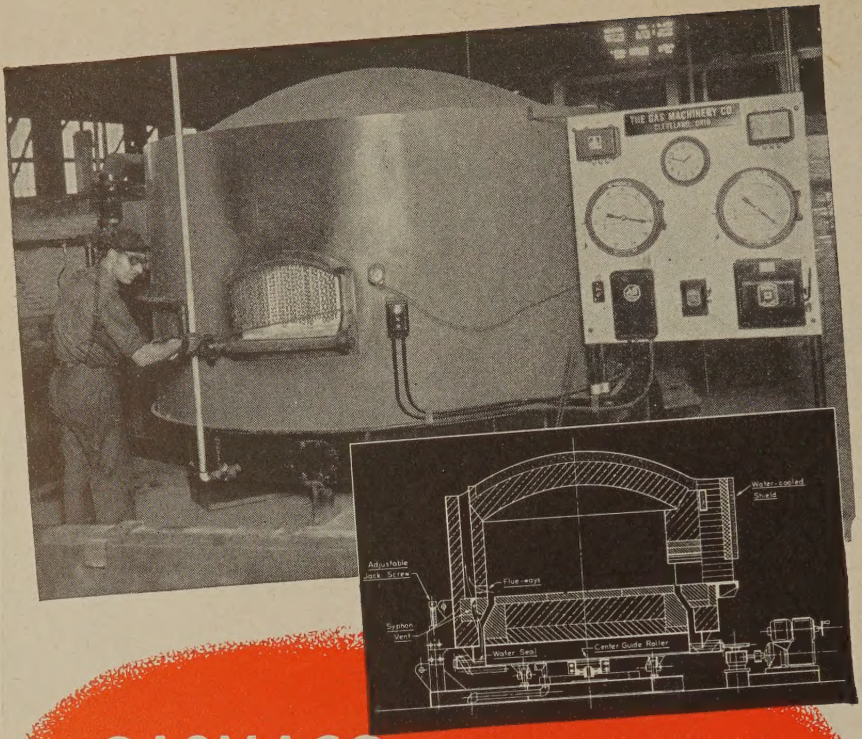
REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.

Republic Electro Zinc Plated Products include ELECTRO PAINTLOK and ELECTRO ZINCBOND in sheets and coiled strip, in various widths depending on gauge involved.

REPUBLIC
STEEL
REG. U. S. PAT. OFF.

Republic
ELECTRO ZINC PLATED SHEETS
Electro Paintlok • Electro Zincbond
REG. U. S. PAT. OFF.

Other Republic Products include Carbon, Alloy and Stainless Steels—Sheets, Strip, Plates, Bars, Pipe, Tubing, Bolts and Nuts, Wire



GASMACO Water Sealed Rotary Hearth Furnace with Special Syphon Vents

FOR FORGING, ANNEALING and HEAT TREATING

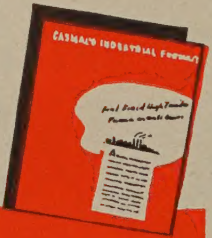
This is one of a complete line of Rotary Hearth Furnaces built in various types and engineered for specific applications of forging, annealing, heat treating, tempering and clean heat treating.

Each furnace is carefully designed to require the least possible operating labor and to reduce maintenance costs.

The floating hearth plates (patent applied for) prevent warpage and maintain a uniform load on each roller. Another and very important feature is the water sealed hearth using patented syphon vents (illustrated in drawing above) to short circuit any water vapor, formed above seal, directly to the flue ways.

It will pay you to investigate these outstanding furnaces. Let's talk over your heat treating problems.

WRITE FOR FOLDER A-100



THE GAS MACHINERY COMPANY

16126 Waterloo Road • Cleveland 10, Ohio

truth mixed with humor in the presentation.

W. C. ERKERT
Director of Purchases
Keystone Steel & Wire Co.
Peoria, Ill.

CHANNELS WANTED

Sir:

. . . We require some heavy parallel flange channels which are not available in any of the regular rolled sections. We would appreciate it greatly if you could put us in touch with one or two firms who have a brake or other type of press capable of forming ⅜-in. plates 90 in. long 5 in. parallel flange channels.

H. S. GERMOND, III
Treasurer
Revolvator Co.
North Bergen, N. J.

STEEL MANUFACTURERS

Sir:

. . . Where could we secure a book showing the steel manufacturers and the products which they manufacture.

S. A. SEXTON
Purchasing Agent
Rome Grader & Machinery Div.
Rome, N. Y.

● We suggest the "Directory of Iron & Steel Works of the U. S. and Canada" published by the American Iron & Steel Institute, 350 Fifth Ave., N. Y., and "Directory of Iron and Steel Plants" published by Steel Publications, Inc., 108 Smithfield St., Pittsburgh 30.—Ed.

CORROSION PREVENTIVE

Sir:

Referring to the Sept. 11 issue Newsfront item on a water-displacing corrosion preventive for indoor storage, what is the name of the firm that makes the preventive.

W. WALLACE McKAIG
Cumberland Steel Co.
Cumberland, Md.

● Bee Chemical Co., 63 E. Lake St., Chicago.—Ed.

METAL TRIM STRIPS

Sir:

We are interested in getting metal trim strips, the snap on type, to be used to trim metal products. Can you give us the names of manufacturers? We have been given the name of Dalistrom Products Co. but we do not know where they are located.

W. T. NARDIN
General Day-Lite Co.
Norristown, Pa.

● A list of such firms is being forwarded to you. You probably refer to Dahlstrom Metal Door Co., Jamestown, N. Y.—Ed.

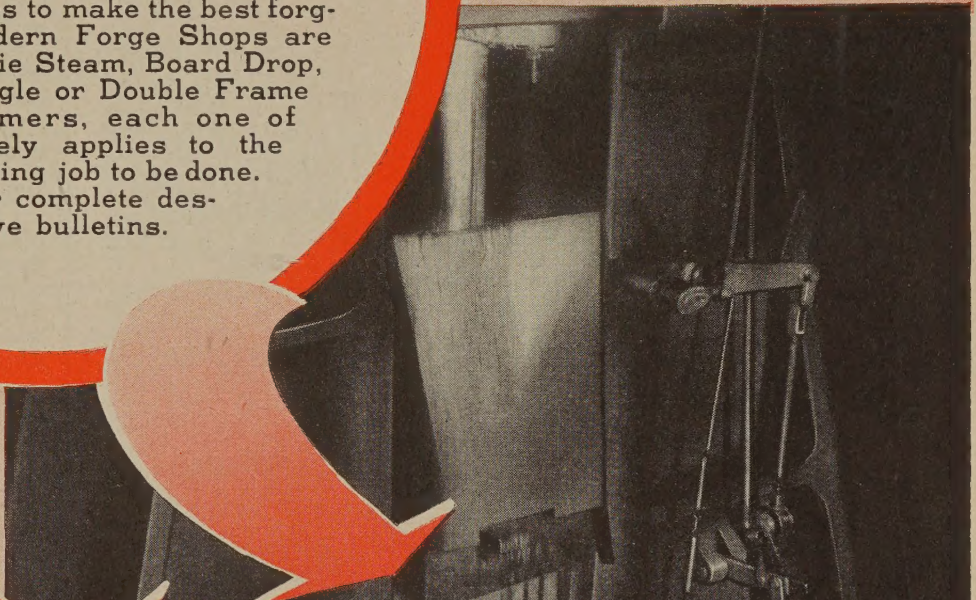
STEEL PUNCH

Sir:

We have been reading the Aug. 26 edition of Newsfront where you have an item stating that there is now being used a steel punch capable of shooting holes through ¾-in. steel.

Good Gang • ERIE HAMMER • *Good Forgings*

THE Hammergang's experience pays off in full when teamed up with Erie Hammers... Designed for the type of work demanded, ruggedly constructed, with perfect response to operator's control, Erie Hammers have long been the first choice of men who know forgings best... and who know what it takes to make the best forgings. Many Modern Forge Shops are equipped with Erie Steam, Board Drop, Pneumatic, Single or Double Frame Forging Hammers, each one of which definitely applies to the specific forging job to be done. Write for complete descriptive bulletins.



ERIE

ERIE FOUNDRY COMPANY • ERIE, PA.

ERIE BUILDS *Dependable* **HAMMERS**

YOUR GUIDE TO . . .
"Better Built"
SPRINGS
PORTER
AMERICAN-FORT PITT SPRING DIVISION
AMERICAN-FORT PITT SPRING DIVISION
PORTER
"Better Built"
EQUIPMENT
SPRINGS . . .
H. K. PORTER COMPANY, Inc.
Yours for the Asking
PORTER BUILT MEANS "Better Built"
PORTER BUILT MEANS "Better Built"

Here in this 28-page engineering catalog you will find everything you need to know about spring specifications: 28 fact-filled pages containing all the data necessary to specify springs for any purpose—formulas, graphs, charts, tables and illustrations for all types of springs from light wire to heavy elliptic. Write today for your copy of Catalog 305.

H. K. PORTER COMPANY, Inc.
AMERICAN-FORT PITT SPRING DIVISION
PITTSBURGH 22, PENNSYLVANIA
District Offices in Principal Cities

We are very interested . . . and would ask you to kindly advise us where we may obtain information regarding the manufacturer of these punches.

G. W. VENNELS
District Manager
Railway & Power Engineering Corp., Ltd.
Vancouver, Canada

● Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh. See illustration, p. 118, in the Oct. 9 issue.—Ed.

TOOL STEEL DIRECTORY

Sir:

Will you please send us 25 copies of your Directory of Tool Steels as soon as possible.

H. LEININGER
Secretary
Composite Forgings, Inc.
Detroit

● The directory is available to subscribers at $2.00 each for one or two copies; $4.50 for three copies; $1.00 each for six or more copies.—Ed.

KIND COMMENTS

Sir:

I have recently had the pleasure of reading three copies of your excellent magazine and I would like you to know that I think it the best magazine of its type that I have yet seen. Most magazines of its type are either too highly technical to be understood by the average engineer, or they are so full of advertisements that one loses interest. The articles on "Carbide Cutters for Milling" by H. A. Frommelt I particularly enjoyed and if you could possibly send me the complete series I should be very grateful. It has been a real treat to handle a well presented magazine printed on good paper. As you are no doubt aware, we are not too well off for paper over here. I hope I may have the pleasure of seeing your magazine again. Best luck to your excellent publication.

J. GRUNDY
Lincoln, England

VERY SMALL CHIMNEYS

Sir:

Can you advise me who makes the very small size chimneys about 3 to 4 in. high and about 1 in. diam.

D. M.
Dinty Moore Glass & Bottle Museum
New York

● Names of such firms are being sent.—Ed.

WASTE PICKLE LIQUORS

Sir:

We would like to obtain copies of an article by C. J. Lewis entitled, "Lime Treatment of Waste Pickle Liquors," which appeared in the June 26 issue.

WALTER L. SHEPPARD, JR.
Atlas Mineral Products Co.
Mertztown, Pa.

COLD HEADING DIES

Sir:

I would like to request a copy of "Getting the Most Out of Cold Head-

SOLVED!

THE COMPLEX PROBLEM OF

INVENTORY CONTROL

At

Frank D Palmer Inc
Chicago

A TOUGH CASE? Yes, but it cracked in a hurry when a Remington Rand system was applied to the inventory control requirements of this famous machinery manufacturer.

As producers of highly individualized packaging equipment, Frank D. Palmer, Inc. are faced with material and tool control problems far more intricate than those of companies making standard products. Not for just one but for *every* customer's order, they must know and anticipate:

- WHAT TO ORDER
- WHEN TO ORDER
- HOW MUCH TO ORDER
- FROM WHOM TO ORDER
- HOW MUCH IS ON HAND
- HOW MUCH IS RESERVED FOR ORDERS IN PROCESS
- HOW MUCH REMAINS DUE

Similar problems apply to their procurement of tools. Many are specially made—and costly. Rigid control must be maintained on allocations, both to jobs and to individual workers. Excessive breakage or loss of valuable tools must be quickly traced and corrected.

Certified protection against fire at point-of-use. These four Floor Model Safe-Kardex units protect the Frank D. Palmer materials control record twenty-four hours a day. Each unit may be wheeled to any part of the office for maximum working convenience.

Heart of their System—Visible Records

PALMER'S MATERIAL CONTROL is now set up in a Kardex system that provides a four-year history of usage, vendors, and prices as well as current balances—with all facts on each item centralized in a single visibly-indexed pocket. The Graph-A-Matic signal on the visible margin flashes prompt warning when executive review is required of materials on hand, on order, reserved or past due.

At the same time, the tool record provides positive control over usage, breakage and loss, based on the same Kardex *visible* principle—with an additional provision for filing tool *charge-out* slips in the record pocket.

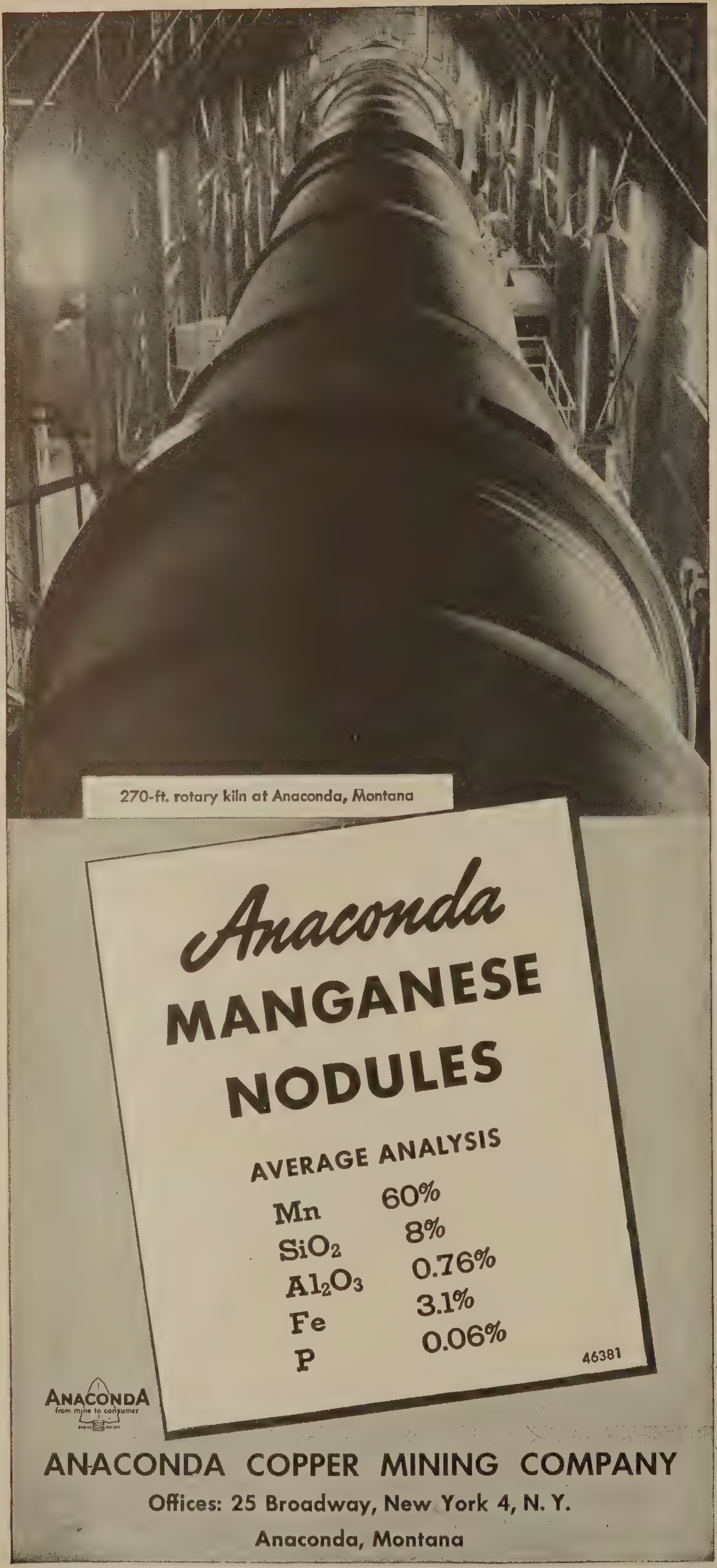
With this scientific system Palmer avoids excessive investment in inventory—yet makes certain that sufficient stocks are on hand, when required for production.

Whether *your* inventory involves thousands of items or relatively few, Remington Rand visible systems bring you closer, more economical control, faster posting, easier reference and lower clerical costs.

For more facts on how to solve your particular inventory problems, telephone your nearest Remington Rand office or write: Systems Division, 315 Fourth Ave., New York 10, N. Y.

Remington Rand

THE FIRST NAME IN BUSINESS SYSTEMS



270-ft. rotary kiln at Anaconda, Montana

Anaconda
MANGANESE NODULES

AVERAGE ANALYSIS

Mn	60%
SiO_2	8%
Al_2O_3	0.76%
Fe	3.1%
P	0.06%

46381

ANACONDA
from mine to consumer

ANACONDA COPPER MINING COMPANY
Offices: 25 Broadway, New York 4, N. Y.
Anaconda, Montana

ing Dies," by F. B. Palmer in the July 21, 1938, issue.

S. W. PHILLIPS
Vanson Tool & Mfg. Co.
Detroit

CORRECT FIGURES

Sir:

In the issue of Aug. 21, p. 117, on aluminum hot-rolled sheet, are the thickness figures correct, or is the decimal point in the wrong place?

J. A. EDEN
146 Chestnut St.
Springfield, Mass.

- 0.10 to 0.20 in. is correct.—Ed.

METALS TESTING

Sir:

We would appreciate receiving tear sheets of the article, "Engineering Significance of Metals Testing," by Blake D. Mills, Jr., which appeared in the Aug. 7 issue.

W. A. WITHAM
Asst. Mgr. of Engineering
Western Gear Works
Lynwood, Calif.

S CURVES

Sir:

It is our intention to publish for free distribution a book containing S curves for various steels, together with descriptions of the various isothermal heat treatment processes, and we would like to include several illustrations from the article on "Martempering" by Shepherd, published in the Jan. 28, 1943, and Feb. 4, 1943, issues. We would therefore be grateful if you would grant us the necessary permission, on the understanding, of course, that we make due acknowledgment in the book.

CLAUDE S. STEWART
Managing Director
Steel Improvement Co. Pty. Ltd.
North Sydney, Australia

- Permission granted.—Ed.

METAL DOOR FRAMES

Sir:

I am writing to ask if you will be kind enough to send me tear sheets of the article "Mass Producing Hollow Metal Door Frames" which begins on p. 71 of the Sept. 4 issue.

DON POOR
Ceco Steel Products Corp.
Chicago

OIL STORAGE TANKS

As subscribers to your publication, we would appreciate it if you could supply us with a list of manufacturers of fuel oil storage tanks; also we would like to have you give us the address of the Iron and Steel Institute.

HERBERT L. RACKLIFF
General Manager
Maine Industries Co.
Bangor, Maine

- We are sending a list of manufacturers of fuel oil tanks. The American Iron and Steel Institute is located at 350 Fifth Ave., New York.—Ed.

The
IRON AGE

Vol. 160, No. 17 October 23, 1947

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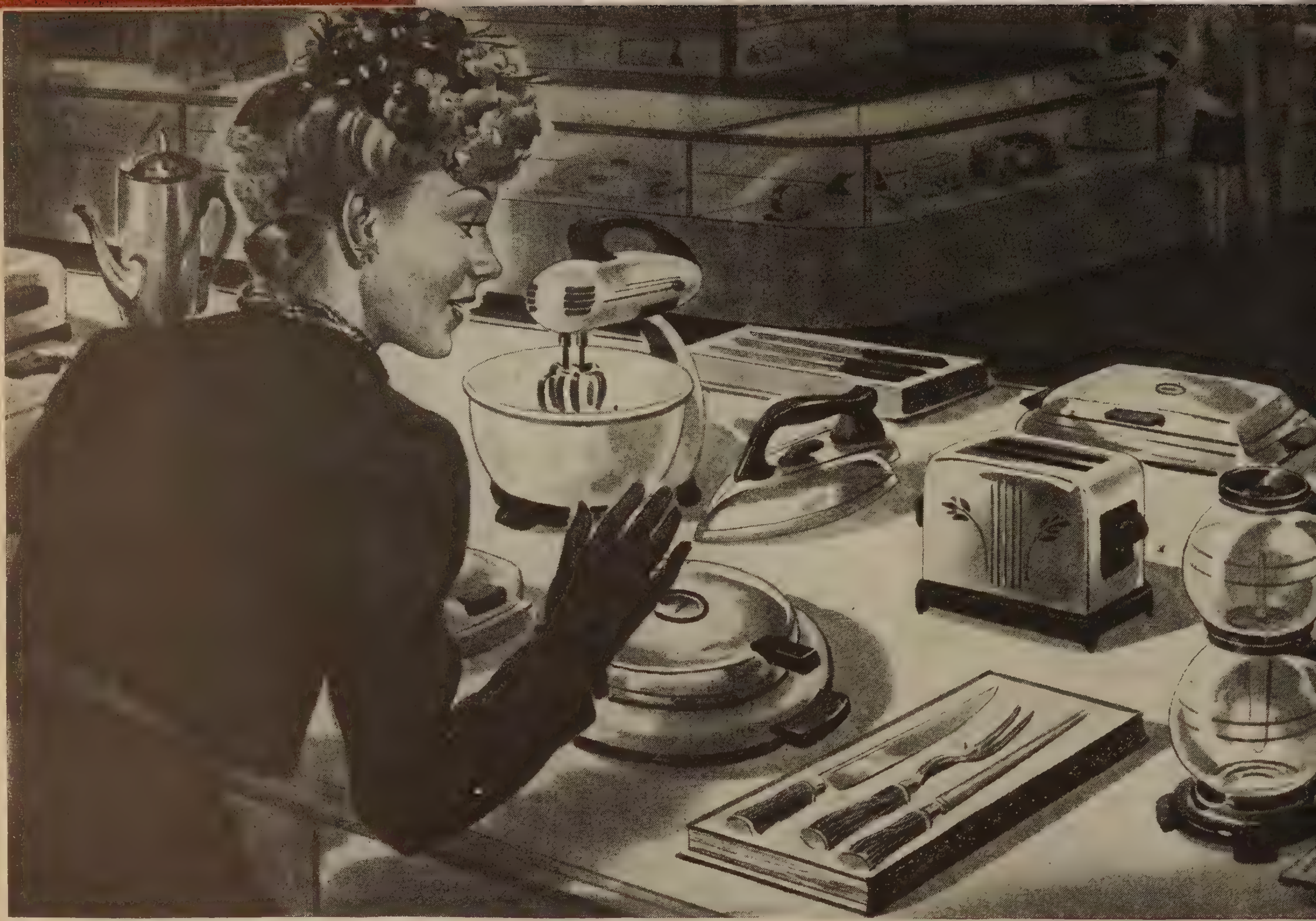

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October 23, 1947

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The Right Hand and the Left

THE past week has seen still another tragic paradox in administration of the shattered wreck of what was Germany. After two years of inaction, the Anglo-American authorities, for some strange reason, have chosen the onset of winter as the time to announce a revived and speeded-up plant dismantling operation. Almost 700 plants are immediately to be scrapped or removed as reparations.

Some 30,000 German workers will be withdrawn from a completely inadequate labor pool to carry out this dismantling. A great new load will be thrown on a transport system already increasingly incapable of carrying minimum food and coal supplies, and equally incapable of handling any extra coal that might conceivably be hacked out of the Ruhr pits. More important, the mass removal of plants now will inevitably lead to such revulsion on the part of all German political groups as possibly to set off the powder train of complete political and industrial paralysis. To the rising chorus of appeals and protests, America's General Clay has threatened the withholding of food shipments if German workers refuse to cooperate. General Clay's voice has all the martial ring of the conqueror, but the words are at strange variance with the objectives of the Marshall Plan. Nor are the words an asset in the intense psychological struggle being waged by Russia and the United States for support of the German people prior to the November meeting of the four foreign ministers in London.

The Holmag plant in Kiel is one example that could be multiplied by several hundred if this curious policy is carried to completion. For two years this plant has employed 1800 workers in the production of railroad, mining, agricultural, fishing and other industrial machinery. The order for dismantling came a few days after Kiel celebrated Recontruction Week. It has been met by refusal on the part of workers, the military has occupied the plant and the affair is now at a stalemate.

In Washington the experts are studying the Marshall Plan, which contemplates shipment of large quantities of machinery, railroad equipment, raw and finished steel, food and fuel into Germany over the next several years. There is a certain annoying contradiction in additional calls for costly American sacrifices when at the same time a body blow is delivered to the very modest industrial activity that somehow has managed to revive in the rump of Western Germany. It seems as if the one hand in Washington doesn't know what the other hand does in Germany.

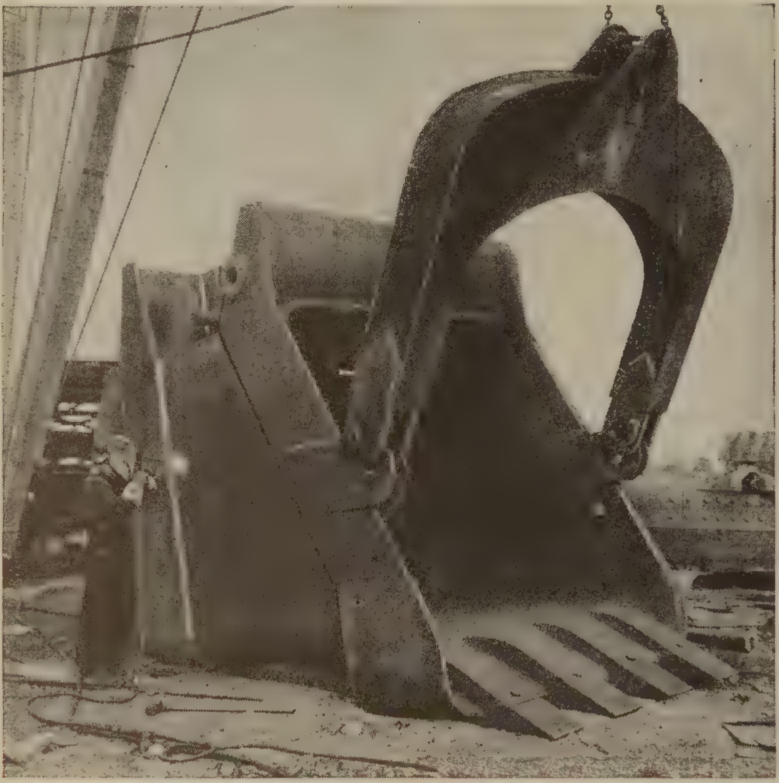
General Clay should again be reminded of the utter folly of shipping scarce goods from this country while destroying identical facilities in Germany. The objective is to get the conquered off the neck of the conqueror. Better should General Clay's energies be directed toward lifting coal output, increasing steel production rather than dismantling steel facilities, a repair program for the railroads, a more determined rooting out of food stocks being hoarded on farms, and administrative rehabilitation to avoid the usual Spring collapse of food, transport and coal.

In Washington the four-year Marshall Plan is keyed to industrial recovery in Germany, a flow of coal and coke into Western Europe, and industrial exports in exchange for food imports. For Germans the problem is simply that of squeezing off the rim of disaster—of somehow surviving the coming winter without further political dislocation, food riots, civil disorders and possible bloodshed.

T. W. Lippert

This Bucket holds 77% MORE

. . yet WEIGHS 23% LESS



This stripper bucket is another example of how large weight reductions can be made with Hi-Steel. Yet it welds as well or better than ordinary structural steel, and it can be cold formed, hot worked, and machined just as easily, so that the most economical fabrication processes can be used.

when made of

INLAND HI-STEEL

The capacity of this stripper bucket was increased 77% while its weight was reduced 23% by the use of low-alloy, high-strength, Inland Hi-Steel. The bucket was originally made of cast metal and weighed 47,000 lb. Its capacity was 13 cubic yards. By designing to take advantage of the great strength of Hi-Steel, the weight of the bucket was reduced 11,000 lb and its capacity increased to 23 cubic yards.

Inland Hi-Steel has nearly twice the working strength of ordinary structural steel, 50% greater ability to stand up under impact loads, and a marked resistance to vibration. In addition, it has about five times the atmospheric corrosion resistance and is far more resistant to abrasion.

Unfortunately, the present demand for Hi-Steel continues to exceed the supply. To make larger tonnages available to you, other steel companies have been licensed to make this superior product. Write for Engineering Bulletin No. 11, INLAND STEEL CO., 38 S. Dearborn St., Chicago 3, Ill. Offices in: Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

INLAND HI-STEEL meets the requirements of SAE Specification 950

INLAND STEEL

AVERAGE PROPERTIES OF INLAND HI-STEEL compared with those of ordinary structural steel

	INLAND HI-STEEL	ORDINARY STRUCTURAL STEEL
TENSILE PROPERTIES (¼" Plate)		
Yield Point	62,000 lb per sq in.	33,000 lb per sq in.
Ultimate Strength	74,000 lb per sq in.	66,000 lb per sq in.
% Elongation in 8 in.	24%	25%
ENDURANCE LIMIT		
Fatigue Strength	49,000 lb per sq in.	33,000 lb per sq in.
IMPACT RESISTANCE (Charpy Impact in Ft Lb)		
Temperature		
80 degrees F	55.3 ft lb	36 ft lb
32 degrees F	43.1 ft lb	33 ft lb
15 degrees F	39.5 ft lb	29 ft lb
0 degrees F	36.3 ft lb	26 ft lb
−10 degrees F	36.8 ft lb	16 ft lb
−25 degrees F	33.7 ft lb	6 ft lb
−50 degrees F	30.4 ft lb	2 ft lb
PHYSICAL PROPERTIES FOR RIVET DESIGN		
Shear Strength	66,000 lb per sq in.	44,000 lb per sq in.
Bearing Strength	115,000 lb per sq in.	95,000 lb per sq in.

The IRON AGE
Oct. 21, 1947

NEWSFRONT

► A Federal Trade Commission study of wartime costs and profits has upset theories of some government economists that wartime profits of industry were unusually great. Actually iron and steel corporation profits after taxes fell to half the prewar rate. Assets of the industry increased only 4 pct during the four war years.

► Most recent "guestimate" on obsolescence of U. S. weapons is that about 20 to 30 pct of such equipment is not up to the standards of items used by other armies. Primary reason for such obsolescence is lack of funds, rather than inferior technology.

► Although Mexico expects to have one aluminum plant in production by 1948, outlook for future U. S. sales remains good. Sheet use is expanding within the limits of present scarcity. Increasing telephone service is expanding demand for aluminum wire and cable, and a need for corrugated plate for roofing is envisioned.

► Using a new fabrication technique Kaiser-Frazer engineers are about ready to go into mass production on their aluminum gas tank. One company official has predicted that successful use of the new method may lead to widespread use of the aluminum tank throughout the auto industry.

► Soldering of high purity aluminum to dies and injection chamber in aluminum die casting operations is reported to have been overcome by nitriding the surfaces of all parts coming in contact with the molten aluminum.

Another means of overcoming contamination and soldering of aluminum from iron and steel pots is the use of a ceramic material which can be brushed or sprayed on. The coating dries hard and smooth and in addition to preventing iron pick up, prolongs the life of the pot.

► Steel wages may be a hot issue next year when contracts on this item alone can be opened. If no agreement is reached--according to the contract signed this year, wage provisions now in force will be effective for another year.

The cost of living index and corporate profits are being watched by the steel union. The depth of the discussions will depend on changes in those items. Strictly speaking there can be no strike if the contract is lived up to--and it is Phil Murray's idea that it will be. But uncontrolled inflation calls off all bets.

► The "My Job Contest" at General Motors may wind up as one of the most interesting Detroit labor relations experiments. Reports indicate that more than 80,000 entries have already come in.

► A power conductance method based on the use of liquid electrodes for salt bath furnaces has been developed. With this design, the furnace may be used for temperatures from 1000° to 2800° F. It is said to reduce radiation and the necessity for electrical replacements. Power costs are estimated to be from 25 to 35 pct lower.

► Modernization of a 40-year old hand mill has quadrupled the output of phosphor bronze rod in an eastern plant. This plant now hot rolls, on a production basis and without reheating, from a cast bar 1-7/16x2-5/16x90 in. down to 3/8-in. rod in 17 passes. The bars are with tin contents ranging up to 6.25 pct.

► Induction hardening of machine tool ways is replacing the flame hardening technique heretofore used by one of the major builders. The method is still in the experimental stage, but is expected to completely replace flame hardening at this plant.

► The British government has warned that steel allocations in the future will be made to industries with the best records in the export drive. The government there is budgeting steel for a great expansion in exports when steel production cannot be expanded in a like manner.

► Bearings of an asbestos and graphite composition formed under pressure are being used in the textile industry on equipment operating in water and on machinery where lubricants cannot be applied. Bearings of a similar composition were used successfully in Germany on mill roll necks.

► Recurrent rumors indicate that a new "Swedish rocket" case may be cropping up in Alaska. The story is that V-2's originating in Siberia--minus warheads--are dropping in Alaska. These are dry runs, of course, Broadway columnists declare flatly that the war has not started yet.

Spot Tests For Steel

Cr, Ni, Si, Mn

* * *

By W. E. THRUN and C. H. BARTELT
Valparaiso University

* * *

Nondestructive semiquantitative spot testing methods are extremely useful in that they provide a rapid means of steel identification. Procedures for estimations of chromium, nickel, silicon and manganese, in steel, are outlined in this article, emphasizing the principle of dilution to color extinction for determination of alloy elements present in relatively high percentages.

SPOT tests described in this article and those previously published for molybdenum[1] and aluminum[2] are designed for rapid and rough estimation of alloying elements in steels and irons without mutilating the object used as sample. They permit identification of steels and differentiation between steels or castings which have the same alloying constituent in different percentages.

In general, rough estimations of trace or residual content (usually under 0.5 pct) are made by noting the color intensity of the filter paper spot made with the undiluted solution. For higher percentages the final solution is successively diluted in spot plate depressions until the spot matches one obtained from a sample of known content; or the dilutions are continued until color extinction is obtained. Usually one drop of the solution prepared on the metal is diluted with one drop of distilled water or special solution as for nickel.

Under the conditions given, nickel, chromium and managanese show no color when diluted to correspond with a sample of 0.06+ pct. The second to the last dilution should show a very faint coloration. Multiply the total dilution volume by 0.06+ to get the percent of alloying element. Thus, six dilutions correspond to a final volume of 64 drops and the percent is 64 x 0.06+ or about 4.0.

For additional information on spot testing methods, see "Quick Methods for Identifying Metals," THE IRON AGE, *Oct.* 17, 1946, *p.* 58.—*Ed.*

With careful work and thorough mixing of dilutions an error greater than 15 pct of the amount present should be the exception. It might be desirable for the operator to determine the extinction dilution and the corresponding percentage value on a sample of known content for himself. Pipettes or droppers should deliver 20 drops to make 1 ml, unless otherwise stated.

The five sample steels used contain 0.12 to 0.64 C, 0.017 to 0.021 S, 0.013 to 0.020 P, 0.07 to 0.09 Cu, 0.03 to 0.52 Mo.; No. 5 also has 0.23 Va.

Spot Test for Chromium

The procedure of Evans and Higgs[3] for the detection of chromium in steel has been modified and simplified to give a rapid, semiquantitative spot test for chromium. Aluminum, cobalt, copper, iron, lead, magnesium, manganese, nickel, and zinc do not interfere.

Procedure—Mark off on clean metal a circle of about 1 cm diam with the edge of a piece of paraffin. Place one drop conc hydrochloric acid and two drops 6N nitric acid on the confined area. When action has ceased, transfer a drop of the steel solution to a spot plate depression. Add three drops 6N sodium hydroxide and six drops 30 pct hydrogen peroxide. After action has ceased, transfer a drop of the solution to a sheet of S&S filter paper No. 601 (special for spot tests). To the underside of the spot add three drops of a diphenylcarbazide solution prepared by dissolving 1 g diphenylcarbazide in 100 ml glacial acetic acid and adding an equal volume of 9N sulfuric acid (25 ml sulfuric acid diluted to 100 ml). After 1 min note color, which lasts for 25 min. Time for one test is 5 min; for six tests, 11 min.

Results—The results in table I show that by noting the intensity of the violet color produced, the approximate percentage of chromium up to 2.24 pct can be determined. For estimations above that percentage, semiquantitative results may be obtained by dilution before making the spot. There is a distinct difference between the very weak violet of sample No. 4 and the very faint violet of a blank.

Spot Test for Silicon

The silicon is converted into the silicomolybdate complex in the presence of oxalic and citric acids which prevent formation of phosphomolybdate[4]. Since the yellow color of the complex does not lend itself to sharp visual distinction of color intensities, the silicomolybdate complex is reduced to molybdenum blue by stannous chloride.

Procedure—Confine an area of about 1 cm with the edge of a piece of paraffin on the clean sample. Add one drop of conc nitric acid and one drop hydrofluoric acid. After action has ceased (2 to 3 min), add two drops of 6N sodium hydroxide and stir. Transfer by means of a capillary pipette a very small drop (0.005 g) to a spot plate depression. Now add one drop of 8N sulfuric acid and one drop of oxalic acid (10 g per 100 ml) to which a few crystals of citric acid have been added. Let yellow color form. To the yellow solution add two drops of freshly diluted stannous chloride (16g $SnCl_2.\ 2H_2O$ + 20 ml conc HCl; dilute 1 ml of this to 80 ml) and stir. Transfer one drop of final blue solution to S&S No. 601 spot test paper for comparison or transfer one drop to a small test tube (8 mm ID) and dilute with 2 ml water. Compare intensities of blue color.

Results—Table II shows that roughly quantitative results up to 0.33 pct Si can be obtained, but that the final solution must be diluted for the estimation of silicon containing higher percentages.

Spot Test for Nickel

In the presence of nickle pink, rose color to red spots are obtained with dimethyl glyoxime. Brown coloration is avoided by the use of a saturated solution of potassium pyrophosphate.

Procedure—Place one drop of acid mixture (8 ml sirupy phosphoric acid + 100 ml water + 8 ml conc nitric acid) on the clean surface. After 1 min add two drops saturated potassium pyrophosphate solution and mix. Place one drop of this cloudy solution upon a spot on S&S No. 601 filter paper which has previously been treated first with two drops of 1 pct alcoholic dimethyl glyoxime solution and one drop of half saturated ammonium carbonate solution. Red rings may be formed around the center of the spot, which disappear in 2 to 3 min. When more than 0.5 pct Ni is suspected, dilutions with pyrophosphate are

TABLE I

Spot Colors Obtained From Steels Of Known Chromium Content

Sample No.	Chromium, Pct	Dilution to Given percent Cr	Color
1	1.53	. . . .	strong violet
2	0.37	. . . .	weak violet
3	0.54	. . . . .	moderate violet
4	0.13	. . . .	very weak violet
5	1.28	. . . . .	strong moderate violet
6	2.24	. .	very strong violet
6	. . . . .	0 505	moderately weak violet
7 (cast iron)	0.48	. . .	moderately weak violet
8	14.00	. . .	very strong violet
8	. . . . .	1.40	strong violet
8	. . .	0.14	very weak violet
8	. . . .	0.07	colorless

TABLE II

Spot Colors Obtained From Steels Of Known Silicon Content

Sample No.	Silicon, Pct	Dilution to Given percent Si	Color
1	0.27	. . . .	weak blue
2	0.30	. . .	weak moderate blue
3	0.24	. . .	very weak blue
4	0.24	. . . .	very weak blue
5	0.64	.	very strong blue
5	. . . .	0.32	moderate blue
6	0.33	. . . .	moderate blue
7 (cast iron)	2.40	. . .	very strong blue
7	. . . .	0.24	very weak blue

TABLE III

Spot Colors Obtained From Steels Of Known Nickel Content

Sample No.	Nickel, Pct	Dilution to Given percent Ni	Color
1	4.00	. .	red
1		2.00	deep rose
1	.	1.00	moderate rose
1		0.50	light rose
1	.	0.25	faint pink
1	. . .	0.125	very faint pink
1	. . . .	0.0625	colorless
2	0.37	. . . .	pink
3	0.51	. .	light rose
4	0.09	.	very faint pink
5	0.18		faint pink

TABLE IV

Colors Obtained From Steels Of Known Manganese Content

Sample No.	Manganese, Pct	Dilution to Given percent Mn	Color
1	0.45	. . .	pink
2	1.00	. . . .	rose
2	. . . . .	0 05	pink
2	. . . .	0.13	very faint pink
2	. . .	0.625	colorless
3	0.89	0.45	pink
4	1.72	. . . .	violet red
4	. . . .	0.43	pink
4	. .	0.113	very faint pink
4	. . .	0.054	colorless
5	0.53	. . . .	pink

---

[1] *W. E. Thrun and C. R. Heidbrink, "Semiquantitative Tests for Moly in Steel,"* THE IRON AGE, *Oct.* 3, 1946, *p.* 41.

[2] *W. E. Thrun and C. R. Heidbrink, "Spot Testing for Aluminum,"* THE IRON AGE, *Nov.* 28, 1946, *p.* 68.

[3] *Evans and Higgs, Analyst* 70, 75-82, 1945.

[4] Schwartz, Ind. Eng. Chem. Anal. ed 14, 843, 1942.

made before making the spot. Comparisons can be made hours after the paper is dry. When the paper is held up to a window or a fluorescent light, the color intensities are more apparent to the eye.

Results—Table III shows the results. A steel of 0.09 pct Ni gives a barely discernible pink. A moderate rose color is obtained with 0.51 pct which matches the color of a 4.00 pct diluted to 0.50 pct. The 4.00 pct sample diluted to 0.0625 pct (1 volume to 64) showed no color on the spot. The 0.51 pct sample diluted to 0.064 pct (1 volume to 8) had a colorless spot.

Spot Test for Manganese

Manganese is oxidized with excess sodium bismuthate in the presence of phosphoric and nitric acids. Since the color is not evident on the filter paper, comparisons are made on a white spot plate.

Procedure—Place two drops of phosphoric-nitric acid solution (see nickel determination) on the clean metal. After 1 min transfer one drop to the spot plate depression. Add an excess of solid sodium bismuthate and three drops of nitric acid (1 volume conc nitric acid + 1 volume water), and stir thoroughly. Allow the dark brown precipitate to settle for 2 or 3 min. Transfer one drop of the supernatant liquid to another depression and note the color. At about 0.5 pct Mn, the solution is pink and at higher percentages, rose to violet red. Dilution to match colors or to color extinction is made with water. The color is stable for about 1 hr.

Table IV shows the results for manganese. There is a detectable difference in color between 0.53 and 0.45 pct Mn solutions. The dilution of two samples to color extinction corresponded to 0.0625 and 0.054 pct Mn.

The authors wish to acknowledge the financial support of Alten's Foundry & Machine Works, Lancaster, Ohio, for making this work possible.

Assembling Turntables With Battery Powered Welders

USING storage battery powered welders, Precision Mfg. Co., Bergholz, Ohio, turns out the bulk of the phonograph turntables produced in the United States, supplying some 15 major phonograph manufacturers. A subsidiary of Alliance Mfg. Co., Alliance, Ohio, the company has 75 production employees operating on a two shift basis, and produces about 14,000 turntables a day.

Being 5 mi from the nearest power substation, Precision Mfg. Co., is allowed a power line load of only 15 kva. Heavier loads would cause flicker and voltage drop in the service to the neighboring community. This being inadequate for production welding of the nature required, the company turned to battery powered welders developed by Progressive Welder Co., Detroit. To keep these welders operating 16 hr a day, a maximum of 30 amp on a 220 v line is needed to operate a standard 3-phase, package type battery charger.

The welders are standard press type projection welders with water-cooled storage batteries and a carbon-disc type contactor. A sequence timer causes the machine to press the parts together for 1 sec, holding the welding current on for ⅓ sec, and holds the parts under pressure during cooling for ½ sec. At the end of the cycle, the machine head lifts for removal of the assembly.

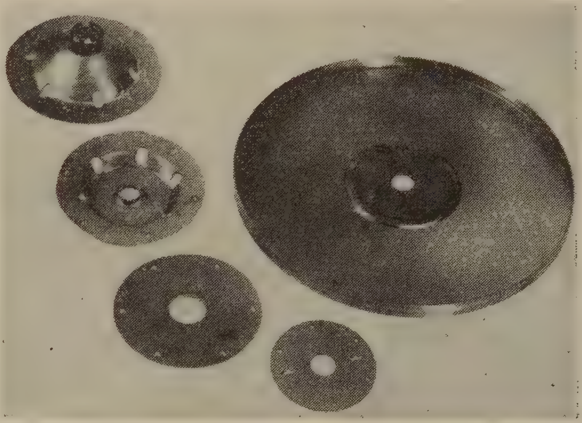


FIG. 1—Four of the various types of mounting brackets used with the standard phonograph turntable shown at right. These brackets are projection-welded to the turntable with storage battery powered welders.

No two of the various types of turntables are identical, but the same general production process is used on all types. The major differences between turntable styles are in the mounting brackets. The accompanying photograph shows a standard table with four different mounting brackets. The punched and drawn turntable is placed over the bracket, which fits into a die in the lower section of the welder. The head of the machine is brought down, current is applied automatically through a contactor controller, and six welds are made simultaneously. The welds are made at the projection points on the brackets, as can be seen in the illustration.

The material used is 18 gage steel throughout, and rejects are said to be negligible. Weld quality inspections are made twice daily by attempting to pry the brackets loose from the turntable with a cold chisel.

Arc Weld Fabrication Of Ball Mills

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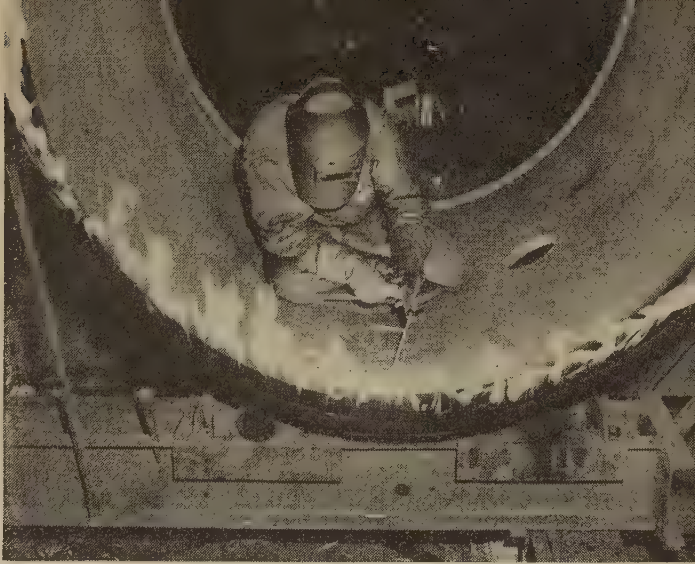

FIG. 1—Welding one of the end rings of a ball mill to the outer shell. Ignited gas line illustrates how preheating temperature of 400°F was maintained during welding operations.

THE ability to combine wear-resistant steel with mild steel, plus important economies in weight and cost, were the factors prompting the use of weld-fabrication for the construction of ball mills for a prominent manufacturer. The mills were built by J. P. Devine Mfg. Co., using shielded arc equipment furnished by Lincoln Electric Co.

Durability is a construction requirement of a ball mill because of the severe punishment it must withstand when loaded and in operation. The mills, 4 ft long and 5 ft in diam, have an armor-plate shell and head, covered with a mild steel water jacket.

Because armor plate is very hardenable, with an unusually high carbon content, Shield-Arc LH-70 rod is now being used for all welding. This is a shielded arc electrode designed for deep penetration and high physical properties.

Both the armor-plate shell and the mild steel jacket were separately welded along the longitudinal seams. Armor plate has very brittle qualities and requires preheating during welding.

A gas line, with continuous pin-hole outlets, was extended around the end circumference of the shell. Fig. 1 shows the operator welding the end rings to the outer shell while the gas line is ignited to provide the preheating temperature of 400°F, which was maintained during all welding. It should be noted that all work was first tack welded prior to the permanent welding.

The preparation of armor-plated heads demanded particular attention to construction details. The two heads were clamped together during welding, as illustrated in fig. 2. Perfect alignment had to be achieved in the erection of the heads since they were subsequently welded to either end of the shell. A gas line was similarly extended around the circumference of the heads to provide the preheating temperature of 400°F. Before welding the radial strengthening members onto the heads, it was necessary to bend the heads to a reverse buckle of $\frac{5}{8}$-in. while the preheating gas flame burned between the heads as shown in fig. 2.

This was done, of course, because of the fact that welding of the armor-plate heads would develop a convex tendency in the heads and the reverse-buckling was necessary to provide a counter-action which resulted in a flat surface for the heads. The heads were then welded to the ends of the shell, as shown in fig. 3.

During all of the welding operations, the shells were kept on rollers to permit the turning of the shells to accommodate the operator and allow him to weld downhand at all times.

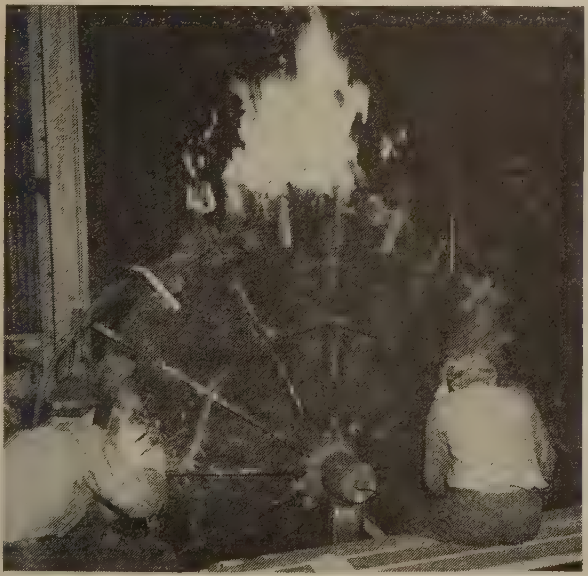

FIG. 2 — Radial strengthening members are welded to the heads of the mills. Heads for each end are clamped together during construction to insure perfect alignment.

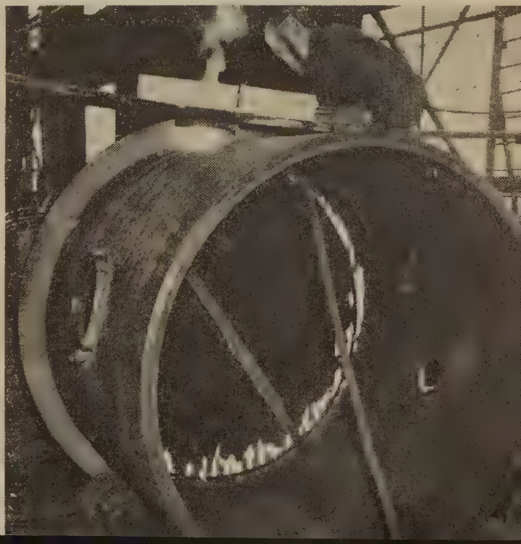

FIG. 3 — Head is welded to shell as preheating continues. Observe how shell is turned on rollers to permit operator to weld in downhand position.

Solid Carbide

Precision boring with solid carbide boring bars with length-to-hole-diameter ratios of as much as 8 to 1 is being performed in steel, cast iron, Meehanite, brass and other metals. Three particular applications, boring holes in valve guides for automotive and aircraft engines and in cored wrist pin holes, are described in this article.

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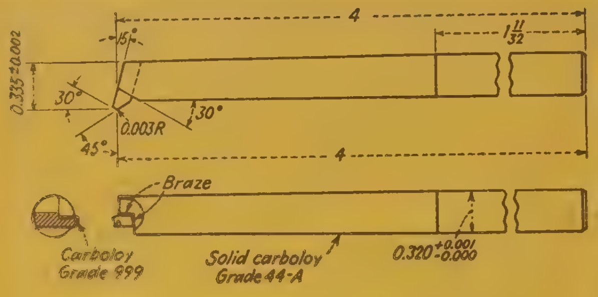


FIG. 1—Design of boring bar used in boring holes in the out pass in cast iron guides. Tool life is between 24,000 and 36,000 bored pieces per grind.

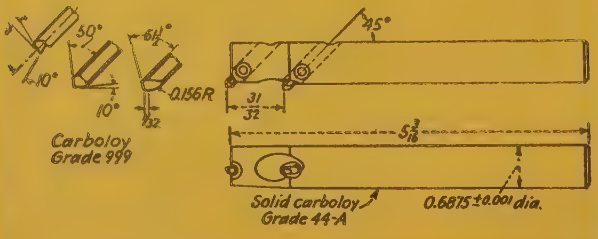
BORING bars made of solid Carboloy have been designed for boring cast iron automotive valve guides having a Brinell hardness of 160 to 200 and with a bore of 0.345 in diam. The ratio of length of the bore to the bore diameter is 7.3:1. Previously, these valve guides were produced by drilling and reaming the cast blank, then bearingizing the hole to give the desired inner surface finish. The bearingized piece was mounted on an arbor and the OD ground concentric with the hole.

Using Carboloy tipped solid Carboloy boring bars of the design shown in fig. 1 in a boring machine of new design, holes are bored in the out pass in cast iron guides. The holes so bored are straight, round, concentric with the OD, and to a tolerance of 0.0002 in. The job is being run at 178 sfpm with a feed of 0.002 ipr. This operation has been in production for some months and has consistently produced 2400 guides per 8-hr day. Tool life is between 24,000 and 36,000 bored pieces per grind.

The valve guides themselves, when produced by this method, are superior to those produced by other methods. Carboloy bored guides in test engines not only have a longer service life but retain oil better than those drilled, reamed and bearingized. This is because it is possible to control the type of bored finish so as to obtain a surface somewhat analogous to that produced by hand scraping lathe ways. This type of surface is an excellent oil retainer, contributing substantially to the longer overall life of the engines using such valve guides.

Carbide boring bars have also stepped up production in the boring of wrist pin holes in automotive engine pistons, as shown in fig. 2. These pistons are of diecast aluminum alloy, and about 0.080 in. of stock in the cored wristpin holes must be removed. Heretofore, these holes were rough drilled and bored on double end machines, i.e., bored from each side of the piston. Hole diameter is 0.750 in., and the total length of the hole through both bosses is 5.8 times the hole diameter. By using carbide boring bars, double end boring is unnecessary; spindle and tool maintenance is reduced about 50 pct from that required with double end boring; and production is practically doubled.

FIG. 3—Design of boring bar used in producing piston wrist pin holes. As the forward roughing tool clears the first boss, the after finishing tool starts the finishing cut.



The bar designed for drilling the wristpin holes is shown in fig. 3 and has a roughing and a finishing tool. The bar itself is shrunk into the spindle nose adapter. The cutting tools are set so that their points are 31/32 in. apart. Since each of the two holes to be bored in each piston is 15/16 in. long, the roughing tool leaves the hole before the finishing tool starts its cut.

The roughing tool enters the hole at a feed of 0.006 ipr, with a depth of cut from 0.030 to 0.035 in. and a cutting speed of 1000 sfpm. When the roughing tool clears the first boss, the finishing tool enters. The feed is simultaneously and automatically increased to 0.008 ipr and the depth of cut is 0.005 in. The tools repeat for the boss on the opposite side of the piston, and then the finishing tool backbores at a feed of 0.002 ipr, removing about 0.0002 in. of stock of the diameter by wiping out the feed marks left by this same finishing tool when boring in.

A surface finish of 13 microinches has been maintained in these holes in production. This high degree of surface finish at the feeds used is possible mainly because of the grind given the finishing tool. The boring tool has a relatively large radius. A boring tool with a radius of this order when used on a steel boring bar will produce excessive chatter, but the Carboloy bar has sufficient rigidity to prevent this. Floor to floor

Boring Bars

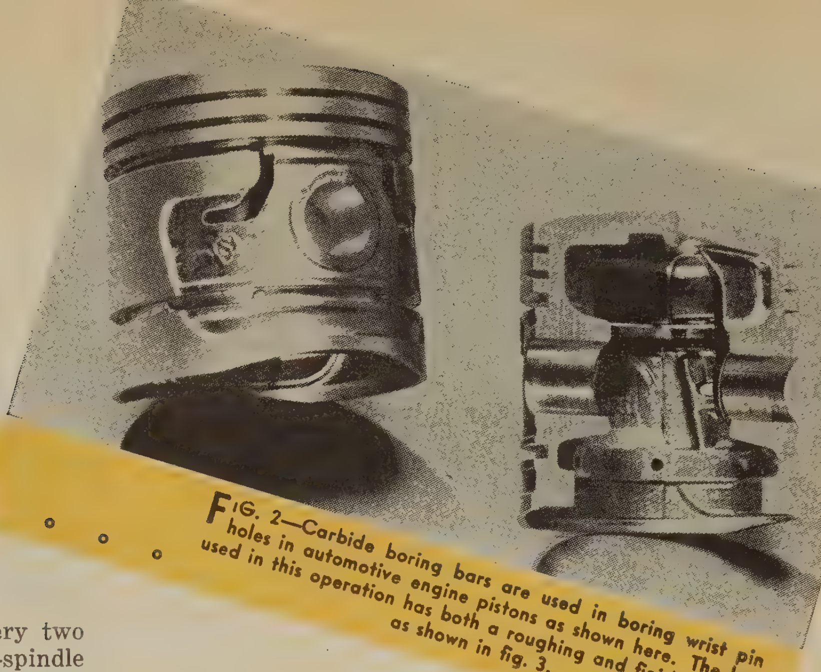


FIG. 2—Carbide boring bars are used in boring wrist pin holes in automotive engine pistons as shown here. The bar used in this operation has both a roughing and finishing tool, as shown in fig. 3.

time on this operation is 25 sec for every two pistons, which means that on a four-spindle machine the production is limited mainly by the ability of the operator to handle the stock.

Carbide boring bars are also being used in boring valve guides for aircraft engines. These guides are made up of a bronze tube brazed (soldered) onto a nickel steel collar. With a ratio of length to diameter of the bore of 5.5:1, chatter from the steel boring bar caused rapid tool failure. Tool changes occurred as often as six times per hour and some 45 pieces were produced per grind. Two cuts with the boring tool were made on each valve guide, after which the guide was pull-reamed to produce a hole that would pass inspection. To meet production schedules, two boring machines were used and two turret lathes were set up to perform the pull reaming.

A standard solid Carboloy boring bar was shrunk into the spindle nose adapter of one of the boring machines. The job was run at 252 sfpm with a cut depth of 0.030 in., and a feed of 0.005 ipr. The hole thus produced meets all inspections including that for surface finish. Between 475 and 500 pieces per tool grind are produced. The cutting tool material is the same grade as previously used on steel bars, and the holes are now being finish bored in one cut.

Other jobs with length-to-diameter ratios as great as 8:1 are being precision bored with solid Carboloy bars in steel, cast iron, Meehanite, brass, bronze, and aluminum alloys. The boring bars used to date have been made in variations to two basic designs. One is special in diameter and length and has more than one tool bit, thus making it a tailored tool for a particular application. The other design is standard. The bar has one tool bit and has been made in a range of sizes up to those for boring 1-in. diam holes. This bar may be used on lathes, jig borers, and on horizontal or vertical turret lathes. The Carboloy boring bars are mounted much as are conventional steel bars. Spindle nose adapters are shrunk onto the carbide bar, although taper shanks can be used on bars of ½ in. and less diameter.

Tin Undercoating Improves Rust Resistance of Steel

THE use of an extremely thin coating of tin (0.00005 in. thick) on mild steel before painting provides an exceptionally good rust resisting combination, according to a report issued by the Tin Research Institute. For purposes of comparison a number of identical steel panels were painted directly, omitting the tin undercoat, and a further series was painted after different rust-prevention treatments, the report states. Tests with various steels and various paint compositions, including linseed-oil paint, nitro-cellulose lacquer, stoving paints and air-drying japans, have been carried out for over 4 years and in every case those specimens which had been pretinned are said to have retained the paint longest. An even more important finding is that the pretinned specimens have retained a clean tinned surface which is free from rust and can be repainted without preliminary scraping and cleaning operations, whereas the surfaces of the untinned steels rusted underneath the paint.

The use of pretinned steel, the institute claims, would do much to improve the appearance and prolong the life of motor car body work and other painted steel products. The costs involved in applying an undercoating of tin, of the recommended thickness (0.00003 to 0.00005 in.), to both surfaces of a sheet of steel are estimated at less than a quarter of the charges for labor and materials required to apply a single coat of paint to only one side of the sheet.

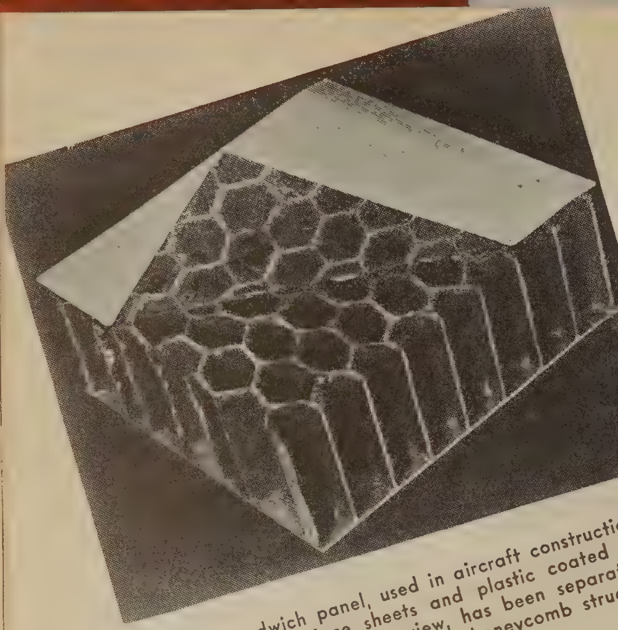


FIG. 1—Sandwich panel, used in aircraft construction, with aluminum alloy face sheets and plastic coated cambric core. Upper sheet, in this view, has been separated from core and bent back to show honeycomb structure.

Aluminum + Plastics

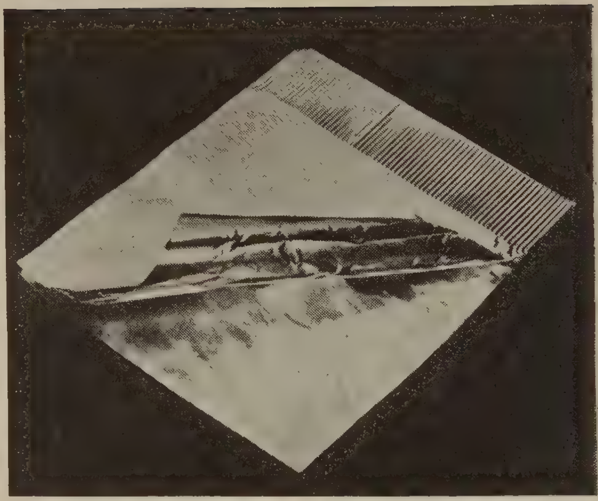


FIG. 2—Heat-sealed crimped joint between two sheets of aluminum foil with thermoplastic coating.

COMBINING aluminum with plastics in various forms offers a number of possibilities for designers and fabricators in a wide variety of industries, and in many cases brings out the best characteristics of both materials. Both possess plasticity which permits forming and molding with the proper application of heat and pressure. Many typical examples of the combined use of plastics and aluminum are found in the field of laminations. The use of aluminum powder for surface coloring of plastics and in the body of a plastic to obtain pearlescent effects has also shown interesting possibilities. Aluminum inserts in plastic bodies serve a practical purpose as well as an esthetic purpose as aluminum has good electrical and thermal conductivity. Some results obtained with these and other combinations of these two materials are presented in this article.

Plastic resins have been used extensively to cement aluminum foil to plastic sheeting, and in addition, there has been extensive development in the cementing of aluminum to aluminum and alminum to wood, paper, cloth, glass, and to other materials to form structural units. Thermosetting cements for this purpose are generally applied from solution and the solvent is allowed to evaporate before the surfaces to be cemented are brought together and the joint effected by heat and pressure. Thermoplastic cements may be applied in the form of a solid, hot melt, or from solution. Cementing temperatures range from 200° to 500°F, depending on the characteristics of the cement. The bond may be of sufficient strength to cause any break to occur through the cement rather than at the interface between the cement and metal. Proper surface preparation of the aluminum before cementing is necessary to develop joints of high strength and durability, but this preparation need not be complicated or expensive. Thermoplastic cements give strengths up to 7000 psi and shearing strengths to 4000 psi, while thermosetting cements show as much as 8000 psi in tension and 5000 psi in shear.

A new field in lightweight structures is being developed with cements of this type. Two sheets of aluminum alloy cemented to a lightweight core provide light, strong, rigid panels. Among the various materials in use or being tested for cores of laminated panels are balsa wood, plywood, cellular cellulose acetate, foam glass, fiber board, asbestos board and plastic. The honeycomb type of cellular construction illustrated in fig. 1 with axis of the cells perpendicular to the facing sheets is also receiving wide attention. These cores are made from resin-impregnated cloth, paper, or aluminum. Since the rigidity of the sandwich-type panel is a function of the moment of inertia which increases as the square of the distance separating the face sheets, it is possible by this construction to obtain structural units of great stiffness. As an example, a panel 1 in. thick having 0.020 in. thick Alclad 75S-T face sheets bonded to a varnished cambric honeycombed core, weighed less than 1 lb per sq ft and displayed a flexural stiffness nearly 200 times that of a solid aluminum alloy sheet of equal weight. The support afforded the face sheets by the core material prevents buckling under shear or compression loadings so the thin material can be worked to much higher stresses than would be possible with conventional construction. A wide

Offers Unusual Design Possibilities

Combining the many supplementary characteristics of aluminum and plastics in a product offers many unusual possibilities to the fabricator and design engineer. With both products available in many different forms, a wide variety of physical properties, appearance and electrical and thermal characteristics is obtainable. This article reviews recent developments in materials and processing techniques, and outlines fabricating methods which may be employed in combining aluminum and plastics.

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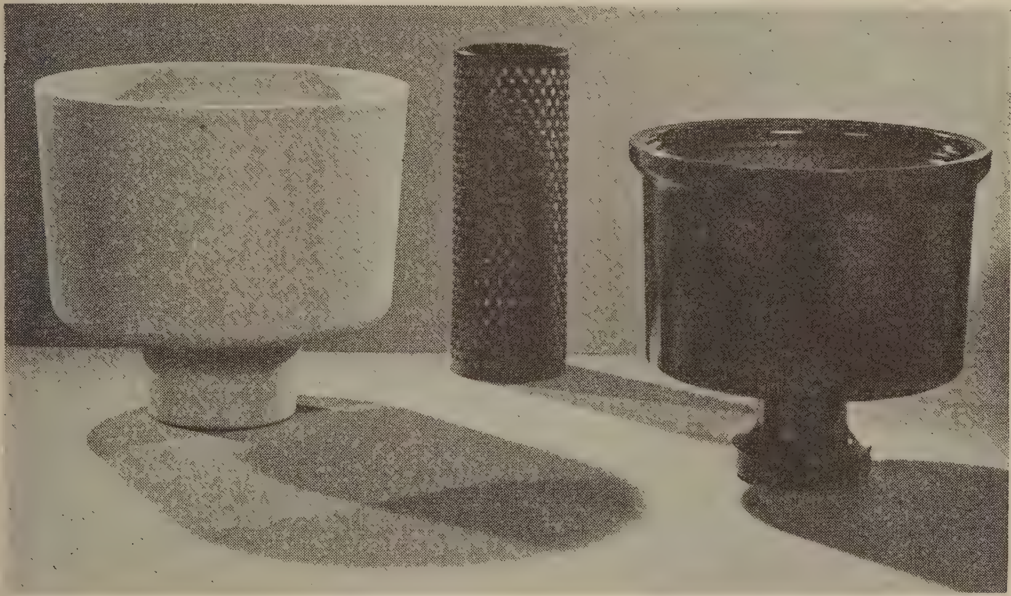

FIG. 3 — Forged aluminum spinning buckets used in rayon industry are made corrosion resistant by a heavy coating of phenolic resin solution (bucket on right). The spinning spool (center) is similarly coated.

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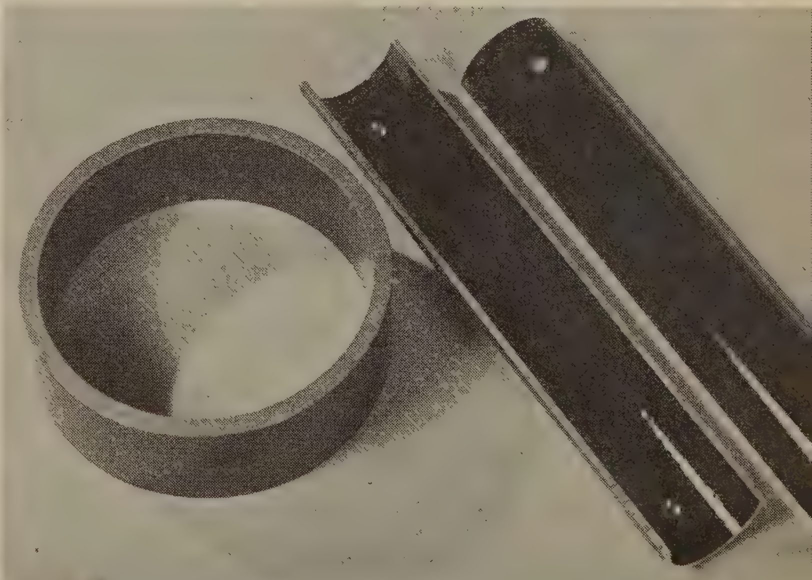
BELOW

FIG. 4—Aluminum pipe, coated inside and out with phenolic resins, has shown very favorable resistance to corrosive effects of mine waters.

use is seen for sandwich paneling in aircraft, bus, railroad car, building and ship construction.

Plastic sheeting, such as cellophane, cellulose acetate, cellulose acetate butyrate or rubber hydrochloride, when laminated with aluminum foil for packaging, results in a product of increased toughness which is impervious to light, moisture, oxygen, hydrogen sulfide and other gases. The moisture vapor transmission values of a typical laminate and its component films are given in table I. In this combination, the aluminum foil itself is opaque to light, nonabsorptive, dead-folding, has high reflectivity and, when used in a gage of about 1.5 mil or thicker, is free from pinholes and hence



impervious to moisture and other gases. The advantages of wrappers and containers made from this type of material are obivous in the shipment and storage of fine steel products and in the prevention of silver from tarnishing from hydrogen sulfide. In the food industry, such packages also prevent loss of essential oils. Drugs and chemicals, particularly in tablet form, when hermetically sealed in such a package are protected from moisture and contamination. In the fabrication of packaging of this type, it is common practice to apply a plastic sheeting on one side of the foil and a heat-sealing coating on the other. Packages are then sealed by application of heat and pressure to the contacting surface. Fig. 2 shows a heat sealed and crimped joint between two sheets of aluminum foil with a thermoplastic coating. In the textile field, gold and silver cloth is made from aluminum foil laminated with plastic sheeting and slit into flat ribbons 1/80 in. wide and wider.

TABLE I

Moisture Vapor Transmission of Aluminum Foil Laminate

Material	Moisture Vapor Transmission, grams moisture per 100 sq in. per 24 hr at 100 deg F and 100 pct relative humidity
Cellulose acetate sheeting (0.001 in.)	100.00
Aluminum foil (0.0005 in.)	0.12
Foil-acetate laminate	0.00

Colored aluminum in the form of inserts has been successfully used in molded plastics for trays, table tops and other articles where it is desired to combine color with metallic luster. The aluminum in this case is colored with dyes or pigments by the Alomilite process. Anodic oxidation of aluminum in an electrolyte such as dilute sulfuric acid forms an oxide coating integral with the metal and which is hard and adherent even through permeated with invisible pores, as many as a trillion to the square inch. The pores absorb dyes, coloring the coating throughout its depth. The uncolored oxide coating also provides an attractive, durable and nontarnishing surface for many applications.

Because of its electrical and thermal conductivity, aluminum inserts in plastic material may also find many applications where an electrically conductive part is required in combination with a good dielectric material. Aluminum of conductor grade has an electrical conductivity of 61 pct of that of the International Annealed Copper Standard. An interesting application of aluminum with plastics which illustrates the thermal conductivity of the metal is shown by a laminated table top. The table surface is a plastic sheeting overlying and laminated to aluminum foil 2 or 3 mils in thickness which removes heat from the surface plastic so fast that a lighted cigarette laid on the table does not scorch the plastic. Aluminum inserts of appropriate size and composition may also be employed to provide added structural strength to plastics.

A plastic aluminum solder combination has been developed for filling up dents, scratches and other imperfections in metal surfaces during repair and finishing operations, and in addition, provides a good foundation for primer coats. The solder is made by mixing atomized aluminum powder, which is granular in form, with a plastic resin solution. When the solder dries and hardens, the metal can be surfaced with a file or abrasive paper or it can be polished to a bright metallic surface.

To obtain a smooth metallic appearance on plastic films, aluminum pigment powder in flake form may be applied to the surface made slightly tacky by a solvent or adhesive and rubbed or brushed out to arrange the flat faces of the flakes parallel to the surface of the plastic. Fine grades are available and 1 g of extra fine lining will cover an area of 25,000 sq cm, if arranged in a single layer with flakes close-packed. Larger flake sizes are also available. A thin, transparent protective coating is finally applied over the aluminum flakes. Pearlescent plastic can be produced by mixing small amounts of fine aluminum powder throughout the body of the plastic. Multiple laminates of pearlescent plastic sheeting made in this way can be sliced at an angle to the surface to produce sheeting with an infinite variety of patterns. A composite laminated body may also be built by sprinkling aluminum powder on the surface of plastic sheets which are then stacked and bonded by heat and pressure. Sections or slices of laminates built up in this manner provide a wide variety of pearlescent and semimetallic effects.

These few examples including those shown in figs. 3 and 4 illustrate the fact that even though plastics compete with metals in some applications, the two materials can be used in combination with each other, to their mutual advantage.

NEW BOOKS

"The Guarantee of Annual Wages," by A. D. H. Kaplan. This discussion of annual wages is primarily concerned with current proposals which would start with the guarantee of substantially full-time pay rolls as overhead, in the expectation that, by having to meet these guarantees, industry would find ways to stabilize production and give greater security at higher levels of employment. The author considers the problem with which industry would be confronted to meet this obligation. The Brookings Institution, Washington 6. 161 p. $2.25.

"Control Charts," by Ed Smith. Book written to provide a simplified, non-mathematical introduction to charts of statistical quality control, covering their construction, interpretation and practical application. It explains how control charts can aid in building quality into products during production. McGraw-Hill Book Co., 330 W. 42nd St., New York 18. 161 p. $3.00.

Weld Repair Of Gray Iron Castings

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Fully machinable welds in gray iron castings can be easily produced by metal arc-welding if the two simple steps outlined in this article are followed. The author describes the types of electrodes best suited for this type of work and explains in detail the techniques necessary to avoid excessive hardness and breakdown of edges or corners.

FOUNDRY defects in gray iron castings are unavoidable. Since no reputable foundry will knowingly deliver defective castings to a customer, the choice is between the scrap pile and some method of salvage which makes a repaired casting fully as good as a perfect casting. Even though there has been some unsatisfactory experience in this field, there should be no stigma attached to salvage by welding as a routine foundry practice, provided only that competent workmanship is used.

Foundries began to use gaswelding for the repair of defects in iron castings almost as soon as satisfactory procedures were developed. However, it was a process requiring considerable skill and a working knowledge of preheating methods. Foundries usually preferred to take their defective pieces to job welding shops where preheating facilities and experienced workmen were available. In those days most castings were simple in design and foundry labor costs were not so high so that it was usually cheaper to throw the rejects back into the cupola than to pay for preheating and welding. Also, in cases where defects were discovered after some machining had been done there was the danger that extensive haating would result in distortion, throwing machined areas out of alignment.

Designers began calling for more complicated castings some 15 years ago. Defects naturally became more numerous and savings through welding looked more attractive. It was thought that metal arcwelding would be the most desirable method in many cases because the localized heating would make extensive preheating operations unnecessary. But satisfactory electrodes were not immediately available. The development of suitable electrodes, and of procedures for using them in foundry and machine shop practice is therefore relatively new. Fig. 1 gives some typical examples of castings repaired by arcwelding.

One important forward step was the production of a composite electrode having a pure nickel wire core wrapped with copper strip, this combination enclosed in a mild steel sheath and flux coated. This electrode is deposited with straight polarity dc, holding a relatively short arc. The high nickel content makes it inadvisable to hold it at high temperatures longer than is necessary; therefore it is recommended that deposits be made with a minimum of stops and starts, and that stops should be made gradually rather than abruptly, to lessen the rapid chilling as much as possible.

When these simple rules of procedure are observed, the deposit from this steel-bearing electrode is fine grained and soft and has tensile strength equal to that of the casting. It is also iron gray in color. The one disadvantage is that a zone of hardness is produced at the line of fusion, making this type of repair unsatisfactory in locations that have to be machined. Consequently this type of composite electrode finds best application in the filling of blowholes where no machining is to be done. This being a rigid type of weld, peening after each deposit is recommended, to relieve stresses and to reduce the chances of shrinkage cracks. The deposit is easily finished smooth by either grinding or filing.

The need for machinability in welded repairs

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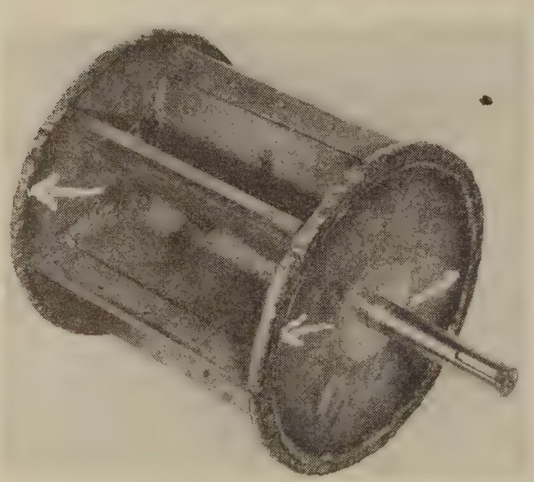

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on cast iron arises not only from the fact that defects frequently occur at machining surfaces but also because mistakes are sometimes made in machining and correctly machined surfaces become worn, both of these situations making a building-up operation necessary. A slight amount of hardness can be tolerated if it occurs in an extremely narrow band, but if the hard area is more than a few thousandths of an inch wide it can cause trouble.

A procedure for obtaining full machinable arcwelds in cast iron, to be described here, will be more readily understood if the cause of hard spots is briefly reviewed. The principal constituents of gray cast iron are iron and soft graphitic carbon. When the iron is heated to fusion temperature some of this carbon is dissolved and rapid cooling, including the chilling effect of the mass of metal adjacent to the weld, results in the formation of hard carbides of iron in the high heat zone. Procedures are now available, and have been widely used for several years, for reducing this hardening effect to the point where it does not cause machining difficulties. This development has vastly broadened the field of usefulness for metal arcwelding in the gray iron foundry industry.

The electrode used is a fabricated electrode consisting of a pure nickel core wire enclosed in

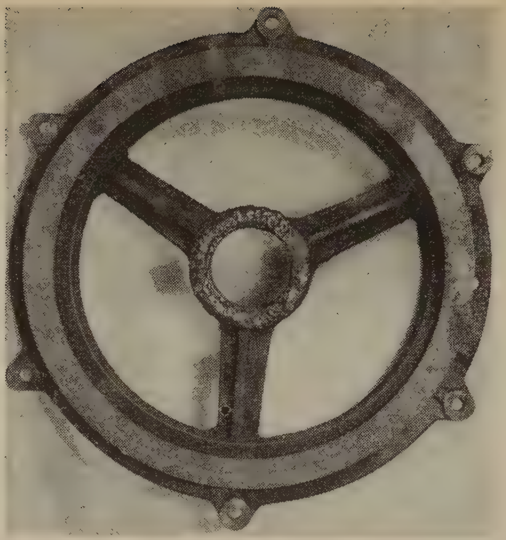

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FIG. 1—Three typical casting repair jobs performed by metal arcwelding. The casting shown at *A* was repaired in 5 min time. The hub repair job shown in *B* was accomplished without preheating and did not distort. The worn rims in *C* were rebuilt to original size by arcwelding.

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a sheath of pure copper, flux coated. It contains no iron or other carbide forming ingredients. The distinguishing feature of this electrode is that when properly appield the entire weld is machinable, including the line of fusion. It can be applied with either direct or alternating current, in all positions. When applied with direct current the electrode is connected to the positive terminal of the welding machine (reverse polarity).

This electrode is not made in sizes larger than 5/32 in. diam, because it has been found that the use of larger sizes will cause too much heat generation in the parent metal and too great a degree of admixture of the fused parent metal with the deposit, both of these conditions tending to increase the width of the hardened zone. For the same reason it is recommended that the lowest current values be used, just enough to be sure of fusing the deposit to the parent metal. Further restriction of the heat zone is obtained by always depositing straight beads. Avoid weaving. It should be noted that the deep penetration that is often so desirable when arcwelding mild steel is studiously avoided in this procedure.

Additional precautions can be taken to reduce hardness. When the deposit must cover an edge or corner, even if the corner angle is not sharp, care should be taken not to hold the arc directly on the edge, because the breaking down of the edge produces a larger mass of fused base metal than is desirable. The arc should be held either on a previously deposited bead or on the base metal adjacent to the edge, so that the deposit flows over on the edge without breaking it down. When the width of the area to be covered makes it necessary to deposit a series of parallel beads, the first bead should be deposited where machining difficulties are least likely to be encountered. Then, in depositing the second bead, the arc should be held mostly on previously deposited metal. The process is repeated with subsequent beads. It is not difficult to secure an adequate bond between the deposit and the base metal, with a minimum of penetration by following this procedure. If a blowhole is to be filled, the same effect is obtained by starting at the center of the defect and working spirally outward, again holding the arc mostly on previously deposited metal. An intermittent (skipwelding) technique is also useful in reducing the heat input and avoiding distortion. Methods of avoiding breakdown of sharp edges or corners by the arc are suggested in fig. 2.

By following the procedure just described, many castings can be welded cold with this copper-nickel electrode and will be readily machinable, including the fusion line. However, two more factors of procedure are recommended for best machinability. One is a small amount of preheating of the casting to counteract or diminish the chilling effect of the base metal next to the weld. This preheat should not exceed 350°F. Correct temperature is easily maintained by using temperature control crayons. In most cases only a local preheat with a torch is necessary.

The second factor consists in depositing an additional bead on top of the first deposit, even though this second bead is superfluous and will be removed in machining. The effect of this second bead is to anneal or temper the slightly hardened layer of base metal immediately below the first bead. For best results this tempering bead should be deposited when the base metal has cooled down to between 300° and 350°F.

Depositing an extra bead over the first bead has the further beneficial effect of annealing the first bead and removing the chance of cross checking. A single bead deposit has a cast structure with grain boundaries that do not always resist the contraction stresses that are set up when the deposit cools. On an exaggerated scale the structure could be compared to a thin strip of wood sawed crosswise from the end of a board, which is weakened by the grain. When a second bead is deposited the first bead becomes annealed, so that its structure could be compared to a composition such as masonite, with grain boundaries running in all directions and offering far greater resistance to both pulling and bending stresses. The effect of the second bead is shown graphically in fig. 3.

If, in a building-up operation on a casting, a deposit of several layers is required, the second layer will automatically reduce the hardness zone at the weld line to nearly the vanishing point. The top layer, however, will necessarily have a cast structure which can be eliminated by depositing a superfluous bead as descriped. If cross checking should develop in this top bead it will not extend into the metal below it, so there will be no checks after machining is completed. In many multiple-layer applications the tendency to cross checking can be corrected by peening after each deposit.

The two electrodes which have been described have their individual characteristics. Sometimes they may be used to advantage in combination. For example, there may be a crack extending from a machining edge of the casting back into the body. A good method of repair is to drill at the end of the crack, chip out a narrow groove along the crack and use the steel-bearing electrode to make a quick weld nearly to the edge, then finish with a deposit of the copper-nickel electrode so as to have machinability where it is needed. The first portion of the repair can be finished off by grinding and there will be no noticeable color change.

An operator familiar with all of these points of procedure has only to study each application and decide which combination will produce the best results. It may be well to observe that from a cost standpoint machinability often is more important than production speed.

Referring again to the trend toward more complicated castings, the foundryman can take on these jobs with greater confidence if he is prepared to repair defects by this inexpensive method, instead of having to charge off a high percentage of rejects. He can also break them down into simpler components, cast separately, and arcweld them together. This method of fabrication for difficult castings has already been used with good results and will undoubtedly become more popular as the demand for such castings continues.

FIG. 2—Methods of avoiding breakdown of sharp edges or corners by the arc.

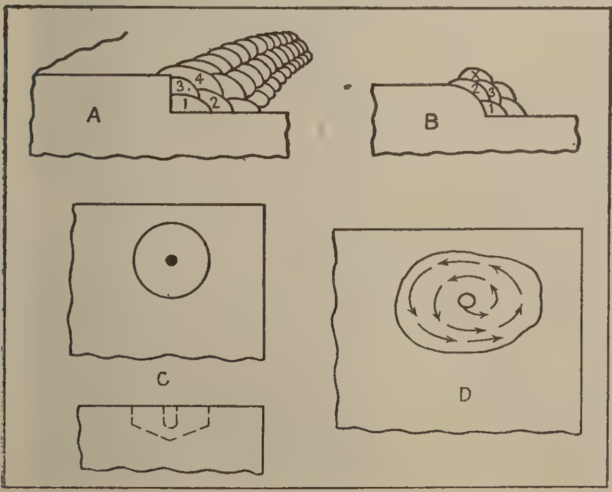
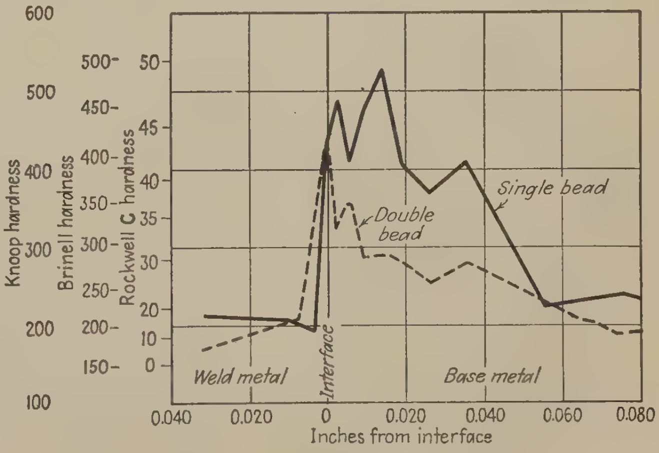


FIG. 3—Chart showing how the heat from a second pass tends to temper and soften the weld zone.



Rectification of Neutral

A new principle for rectification of neutral salt baths—reconverting the oxides to the original chlorides, instead of forming insoluble reaction products — is described in this article. Advantages accruing from this method, called the Neutra-Gas process, are said to be cleaner work, lower salt consumption and elimination of sludge formation.

THE Neutra-Gas process is a new and improved method for maintaining the neutrality of chloride base salt baths. Employment of the process presents something of a paradox in that the gas employed (methyl chloride) is shipped as a liquid, while the liquid bath (molten chlorides) is shipped as a solid. The beneficial effects of temperature and pressure produce the necessary phase changes to make practical working tools of both.

Protection for metal surfaces and good equipment life having been added to the other advantages of salt bath heat treating, which include rapid, uniform heating and reduction of distortion, molten salt baths, operating at temperatures of 300° to 2400° F, are now generally recognized as the ideal heat-treating mediums for many applications. A case in point is the neutral salt bath. Basically, this bath is composed of chlorides of the alkali and/or alkali earth metals, as it has been from the very start. The pitting, decarburization, sludging, and short life of pots are no longer the heat treaters' headache that they formerly were. Better control of chemicals, better rectifiers, better alloys, and improved furnace construction have all contributed to improved operation.

By careful selection of raw materials, the salt bath may be assumed to be practically free from oxides, sulfates, and other oxidizing materials. So long as it stays in this condition it will be neutral to steel surfaces and will not form sludge. During continued use at high temperatures, however, the bath becomes contaminated with oxides formed at the interface of the molten salt and the atmosphere. The presence of these oxides causes the molten salt to oxidize and/or to decarburize steel surfaces, see fig. 1. It is fortunate that the bath may be restored to its original condition by the addition of so-called rectifiers or deoxidizers. Probably the first material used for this purpose was cast iron chips, which reduced the sulfates and effected some improvement in the bath. On the whole, this method of rectification was unsatisfactory.

Borax and boric acid were the next materials used. Those familiar with the borax bead test of freshman chemistry know how fused borax or boric anhydride will dissolve metallic oxides to form complex borates. This principle was applied to molten salts. A thin layer of borate was sprinkled on top of the bath and allowed to react with the oxides in the bath and then, eventually, skimmed off. The practice has a certain amount of merit, but also some disadvantages. There is always some formation of sticky sludge, which must be ladled from the bottom of the pot. Occasionally it is found that a sticky film of borate adheres to the parts being treated; and the method is never completely effective in removal of oxide.

The first positive rectifier introduced was a mixture of powdered silicon and powdered silicon carbide. These materials react with the metallic oxides to form complex silicates which settle to the bottom of the pot as a sludge that must be removed from the pot at regular periods. The rectifying action is positive, and, if used regularly, the bath may be kept oxide-free. Disadvantages include the necessity of sludging and the possibility of rectifier particles clinging to the work.

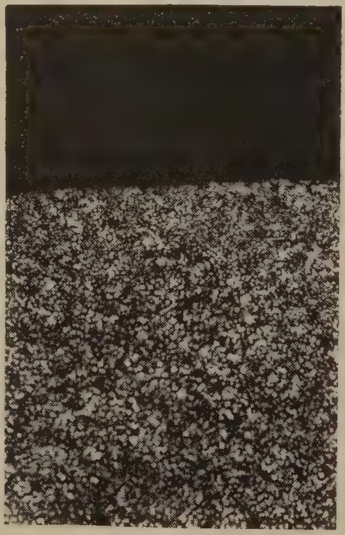


FIG. 1 — Photomicrograph of the edge structure on SAE 1095 steel treated for 60 min at 1450°F in a commercial neutral salt installation using the Neutra-Gas process. Sample quenched in caustic solution and tempered at 1200°F. 500X

Salt Baths

* * *

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* * *

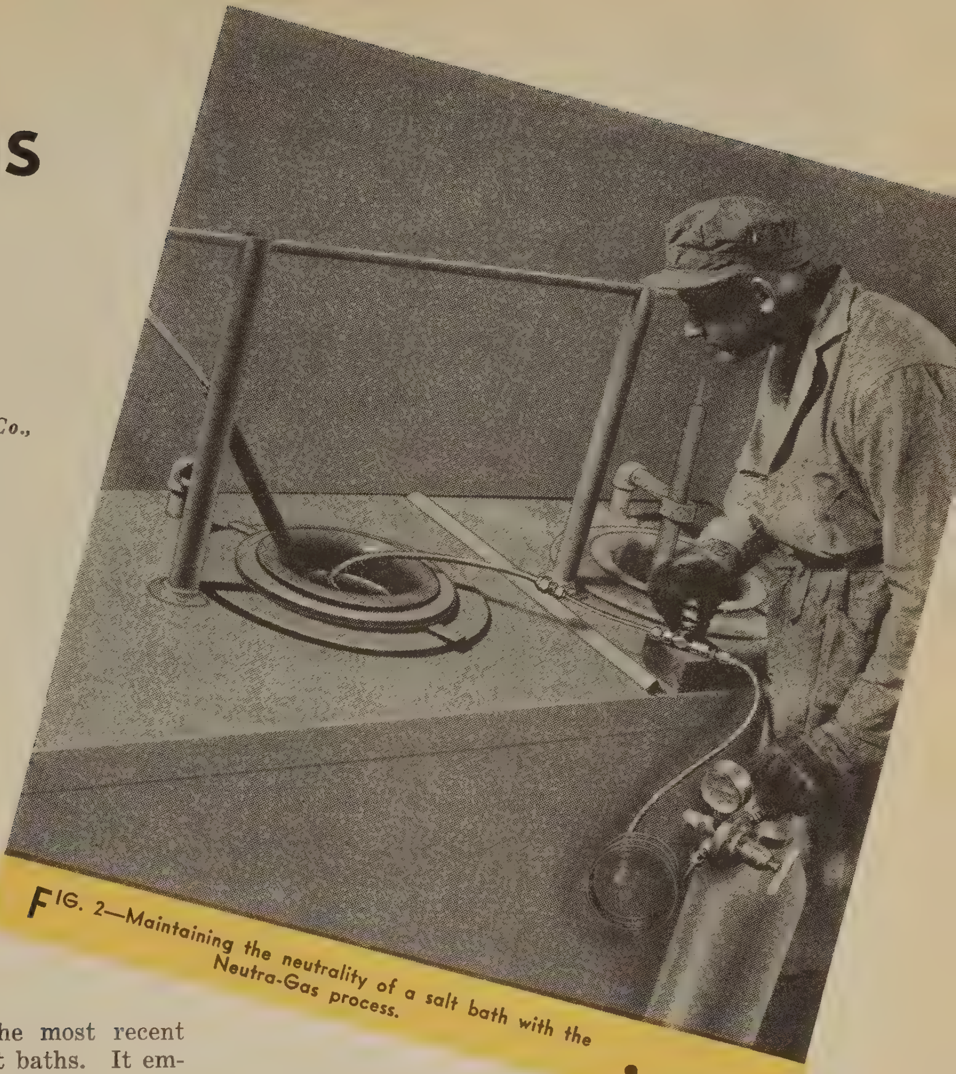

FIG. 2—Maintaining the neutrality of a salt bath with the Neutra-Gas process.

The Neutra-Gas process is the most recent method of rectifying neutral salt baths. It employs a somewhat different principle than former rectifiers, in that instead of removing the oxides by forming a reaction product insoluble in the bath, it reconverts the oxides to the original chlorides. The gas employed is methyl chloride, which breaks down, when heated, to form hydrochloric acid and ethylene. The hydrochloric acid reacts with the oxides to form chlorides and water; the ethylene burns at the surface of the bath.

The chemical reactions involved follow:

$$2CH_3Cl + \text{heat} \rightarrow C_2H_4 + 2HCl$$

$$C_2H_4 + 3O_2 = 2H_2O + 2\ CO_2$$

$$M_2O + 2HCL = 2MCL + H_2O$$

where M is an alkali metal, or

$$MO + 2HCl = MCl_2 + H_2O$$

where M is an alkali earth metal.

Anhydrous or hydrochloric acid may be used, but handling difficulties are such that methyl chloride was chosen, due to its general availability, reasonable price, and the fact that it presents no handling problems.

The equipment required is simple, consisting of a pressure regulator, a needle valve, a delivery tube and the necessary piping and fittings, in addition to the tank of methyl chloride. The delivery tube (see fig. 2), is immersed in the bath to a minimum depth of 6 in. and the gas bubbles through at the rate of a few bubbles per second. Oxides and other contaminants whose reaction products are gaseous (carbonates and cyanides) are converted to chlorides. Neutrality may be maintained without making additions of fresh salt and sludging is eliminated. Not only does the work come out of the bath perfectly clean, but no rectifier particles are found clinging to the work. Salt consumption is minimized because the process maintains fluidity of the bath and because no salt is removed by sludging operations.

One rather unusual aspect of the Neutra-Gas process is the tendency to eliminate the hardened sludge found on the bottom and sides of some used ceramic pot furnaces. This sludge, usually composed of oxides and silicates, is normally insoluble in the bath. The chemistry involved in this sludge elimination is not too apparent. It may be that the constituents are partially transformed to volatile chlorides which are expelled from the bath, and partially to chlorides which are soluble in the bath.

The Neutra-Gas process operates most efficiently when used to maintain the neutrality of a new salt bath. Baths which have become badly contaminated may require large amounts of gas; moreover, such baths may contain reaction prod-

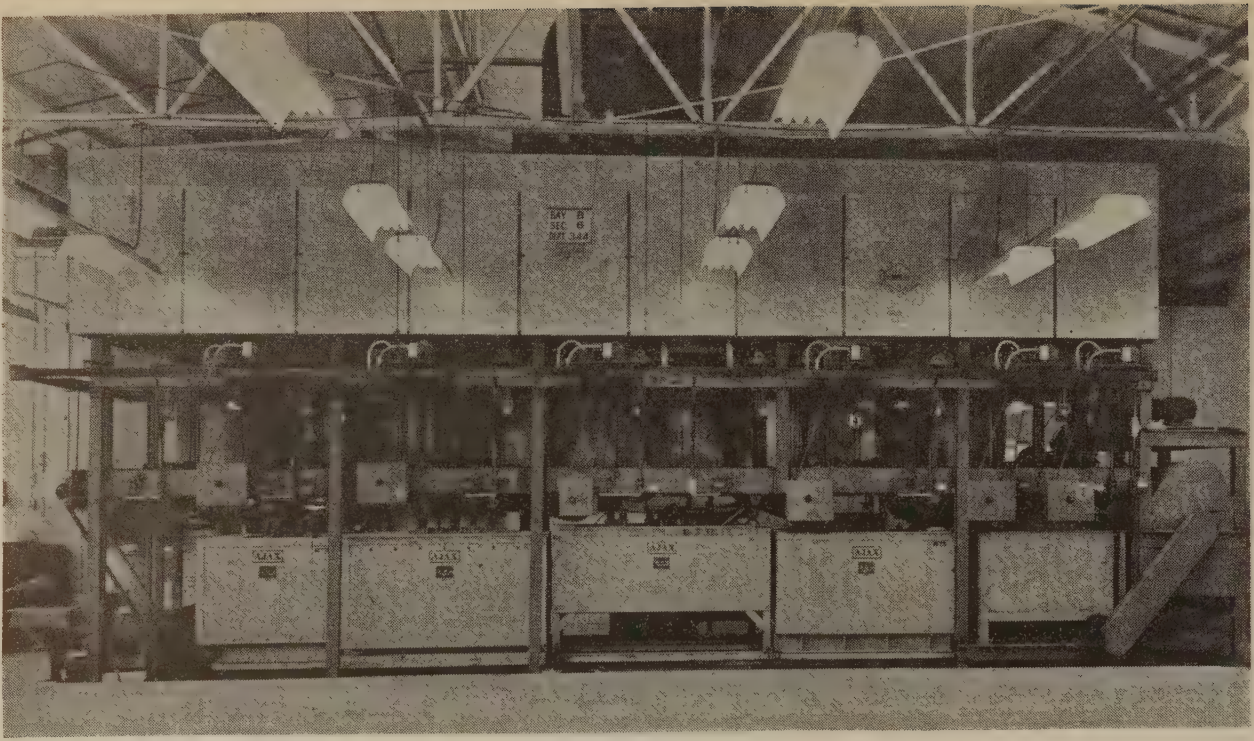

FIG. 3—A completely conveyerized salt bath furnace setup for the isothermal heat treatment of SAE 52100 steel bearings. The Neutra-Gas process is used to maintain the neutrality of the austenitizing bath in this installation.

ucts from previously used rectifiers which may interfere with the process. Under no circumstances should the process be used with salts containing an incorporated rectifier. The neutrality of salt baths contained in ceramic pots is more easily maintained than that of baths contained in metal pots. This is due to the more rapid formation of oxides in the latter type of equipment. The process is adaptable, however, to either type of equipment.

The length of time per shift that the Neutra-Gas process must be operated to maintain neutrality varies with each installation. It is dependent on such factors as temperature, type of salt, and the area of molten salt exposed to the air. A typical electric furnace installation of neutral salt operating at an average temperature of 1500°F, with 4 sq ft of surface area, uses the process 2 hr per 8-hr shift. A 100-lb cylinder of methyl chloride lasts well over 2 months. Only small amounts of fresh salt are added to replace dragout as required. The economics of the process may be visualized easily, since, at 16¢ per lb, the cost of the gas is only a few cents per day.

It is highly desirable to control the neutral bath by a periodic chemical analysis for oxides. This simple test serves as a basis for increasing or decreasing the use of the rectifying gas.

The Neutra-Gas process, which has been applied successfully in many production salt baths operating up to 1700°F, is still in the experimental stage for baths operating at temperatures from 1700° to 2400°F. At high temperatures a graphite delivery tube is used, coated with a ceramic paint on the outside diameter, above the bath line, to prevent its rapid disintegration. Experimental results appear promising.

Reducing Iron Content of Magnesium-Base Alloys

RESULTS of experiments conducted in England to establish optimum conditions for removing small quantities of iron present as an impurity in magnesium-base alloys by allowing manganese-rich particles to settle out of the molten alloy, are discussed in a recent issue of the *British Journal of the Institute of Metals.*

The article states that although removal of iron from magnesium-aluminum alloys is efficiently carried out by this process, particularly if two successive settling operations are employed, it is not so readily accomplished in the case of binary magnesium-manganese alloys. The article states that virgin melts do not give such good results after treatment as do melts containing considerable proportions of secondary ingot, apparently because of the lower initial iron content of the latter.

Additional experiments were carried out to ascertain the most suitable steel for making crucibles for remelting the alloys of low iron content. A high-manganese, high-carbon austenitic steel for this purpose gave the most interesting results as a seasoning effect was detected whereby suspended samples of crucible material appear to contaminate a melt, held in a graphite pot, at a progressively decreasing rate. Evidence is included in the report to show that the ratio of manganese in solution to that out of solution is of great importance in connection with the corrosion behavior of the binary magnesium-manganese alloys.

Solidification of Steel Ingots

Continuing this mathematical study of ingot solidification as influenced by K, a comparative measure of linear freezing speed, the author discusses some requirements of mold design, in this second part of a four-part article. Corrections to K values, to permit comparisons with other types of steels and other types of ingots, are summarized, and relative effects on speed of freezing of various mold shapes are considered.

° ° °

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° ° °

CORRECTIONS to the K *values of Nelson to permit comparisons with other steels, other lengths of ingots, other proportions of hot top, etc.* According to fig. 10, the original results of Nelson lead to a relation of the form $K = mZ^n$ (4) with m constant for each type of ingot, n = constant for all types of ingots. However, m and n may be influenced by various amounts of hot top, various lengths of ingots, etc., in such a manner that they could not be used for comparison with other experimental results without the following corrections:

(1) From the convention that the relative wall Z is taken at the top of the ingot, the time should be taken from the moment the ingot is filled to that level (instead of from the "beginning of pour"). The time to fill the smallest ingot has been taken as 1 min and for the time to fill the other ingots computed in proportion to the volume under the hot top, see table I.

In part I of this article, THE IRON AGE, *Oct. 9, 1947, the author introduced fundamental concepts regarding solidification and presented methods whereby K values can be utilized.—Ed.*

The graphs of fig. 11, A to E, have then been plotted as a relation between $\sqrt{T}$ and D after using the Nelson's times minus the above corrections. For most of the ingots there is now an obvious trend justifying curves as drawn which imply a K value increasing progressively from beginning to end of solidification for square and round ingots, and leading to final K values as follows; for ingots in the same order as in table I:

$K = 1.1235$; 1.0650; 1.10955; 1.2419; $(t)\ K = 0.9605$; $(w)\ K = 1.4328$; $(t)\ K = 0.9849$, $(w)\ K = 1.4576$.

There are also some obvious discrepancies in test results. Hence the correction made in fig. 11 E to have a same average freezing time in the two directions (instead of a longer time and smaller K value in the narrow direction as already apparent in fig. 4 and hard to conceive.

(2) Correction for long and short ingots—short ingots will freeze comparatively faster because of the greater proximity of the mold bottom which is exhausting heat in the same manner as the side walls. The idea is to try to bring all experimental K values to what they would be for a same relative length of ingot expressed by the slenderness ratio $\frac{L}{C} = 3$ (ratio of length to mean transverse size, with 3 a common value in commercial ingots; for Nelson's ingots $\frac{L}{C}$ varies from 2 to 4.25).

Referring to fig. 12 showing a short cubic ingot and a long ingot of same cross-sections, the K value on the bottom can be treated in the same manner as the K value on the side walls; only the distance to freeze will be vertical and will lead to a Z value and a transposition factor generally small. Since the lower parts of molds are usually heavier but start freezing sooner, a uniform wall thickness (a) on the five faces may be assumed.

Then for $L = \frac{C}{2}$, there is a same $\frac{K}{4}$ value on the five faces for a total of 1.25 K measured on the horizontal vector $\frac{C}{2}$ going to the center of the top section. But for the general case and from later findings, $\frac{K}{4}$ on the side walls can be expressed by $\frac{K}{4} = \frac{m}{4}\left(\frac{a}{c/2}\right)^{0.219}$ while on the bottom it is $\frac{m}{4}\left(\frac{a}{L}\right)^{0.219}$

$$\text{or} \quad \frac{m}{4}\left(\frac{a}{c/2}\times\frac{1}{2L/C}\right)^{0.219} = \frac{K}{4}\left(\frac{1}{2L/C}\right)^{0.219} \qquad (5)$$

After transposition from (L) to $\left(\frac{C}{2}\right)$ this becomes

$$\frac{K}{4}\left(\frac{1}{2L/C}\right)^{0.219}\times\left(\frac{C/2}{L}\right) = \frac{K}{4}\left(\frac{1}{2L/C}\right)^{1.219}$$

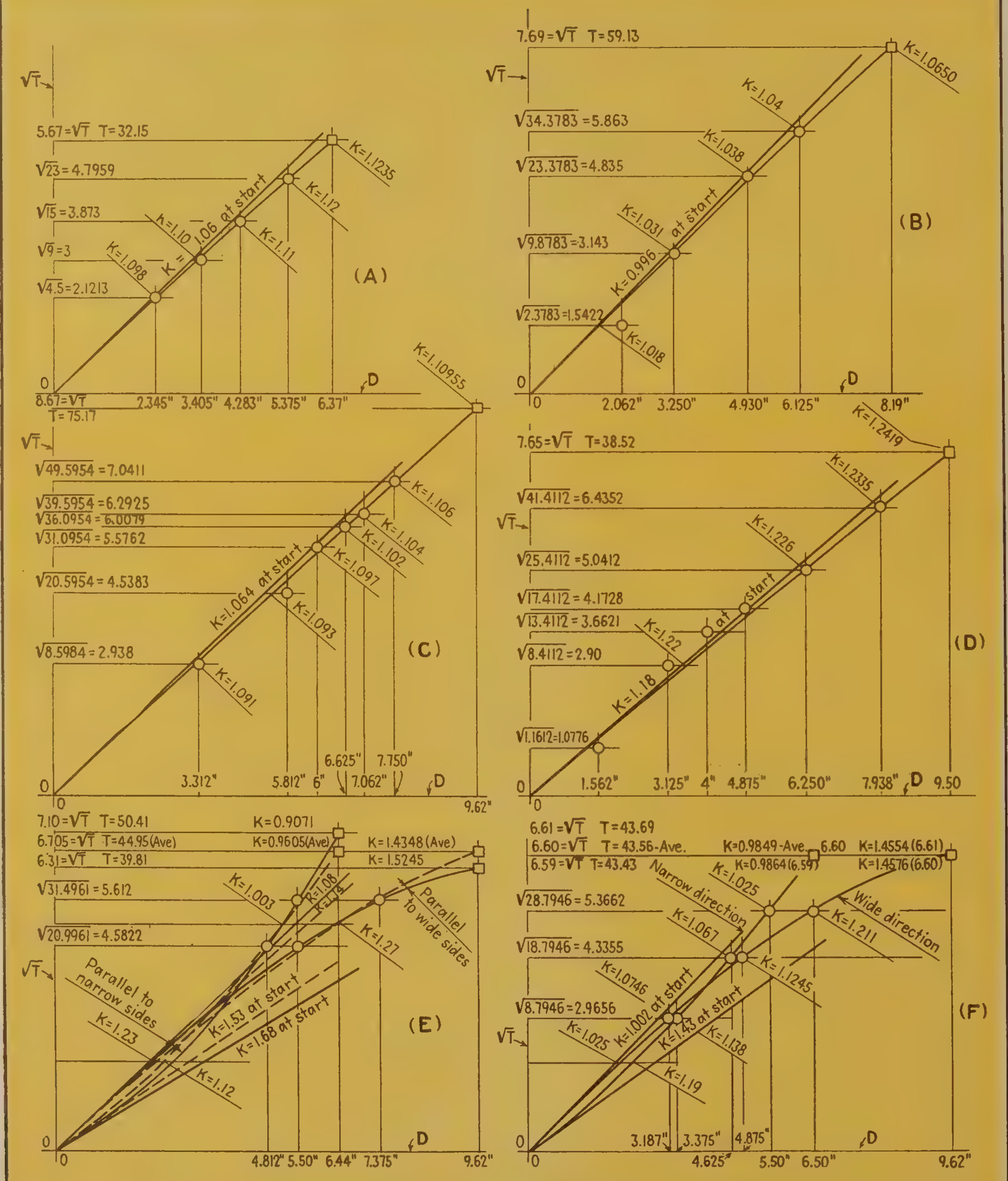


FIG. 11—Progressive cooling curves for various sizes of ingots; (A) 13x13 in.; (B) 17x17 in.; (C) short 20 in. round; (D) long 20 in. round; (E) short 14x20 in.; (F) long 14x20 in.

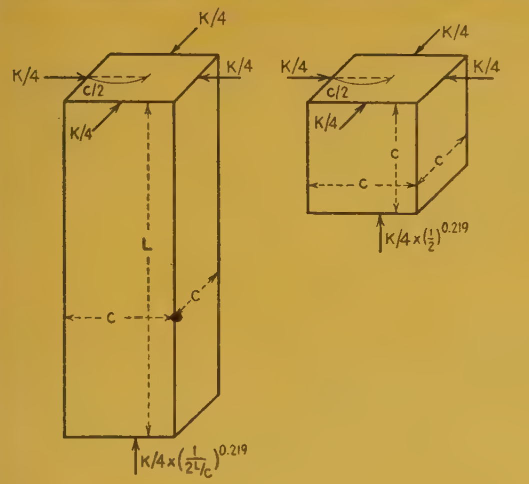


FIG. 12—Treatment of K for (A) a short cubic ingot and (B) a long ingot of same cross-section.

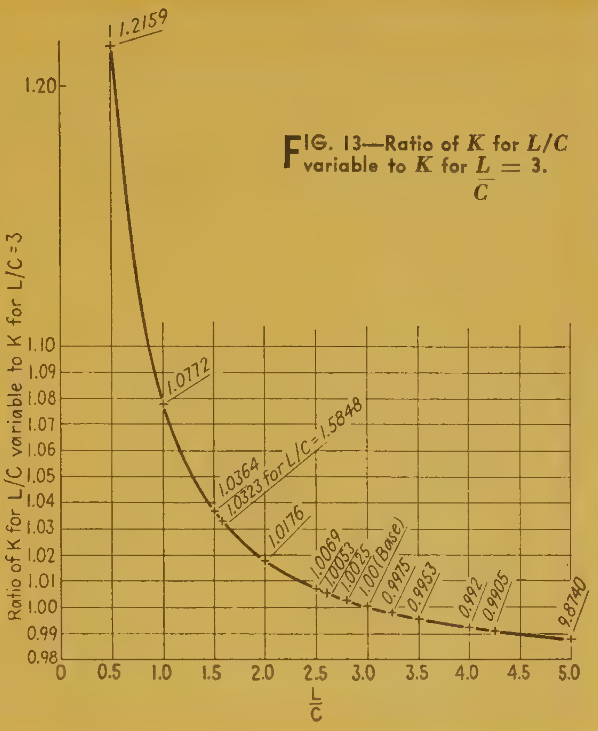


FIG. 13—Ratio of K for L/C variable to K for $\frac{L}{C} = 3$.

Then the total K value on horizontal $\frac{C}{2}$ is

$$K\left[1 + \left(\frac{1}{2L/C}\right)^{1.219}\right] \qquad (6)$$

which permits of figuring the relative K values for various slenderness ratios when it is unity for $\frac{L}{C} = 3$. This leads to the graph of fig. 13. As an example, an ingot with $\frac{L}{C} = 2$ will have a total K value approximately 1.0176 times as large as that of the same type of ingot with $\frac{L}{C} = 3$.

(3) Correction for hot top—a hot top supplies additional heat to the body of the ingot, retards solidification and therefore decreases the K value, compared to an ingot with open top. This can be taken into account by considering the total heat involved. It is observed that approximately 75 pct of the liquid steel originally contained in the hot top solidifies there. Consequently, when solidification is just complete, the heat on the body is multiplied by

$$\frac{100 - \textit{hot top}\ (\%) \times 0.75}{100 - \textit{hot top}\ (\%)}$$

Now, freezing of the ordinary ingot of same size as the hot top ingot can be expressed by $D_1 = K_1\sqrt{T_1}$, with the hot top: $D_1 = K_2\sqrt{T_2}$, and K_2 is smaller because T_2 is larger. But the increased heat could also be used to make an ordinary ingot of larger size freeze in the same time: $D_2 = K_1\sqrt{T_2}$ with the result that

$$K_1 = K_2\frac{D_2}{D_1}.$$

In such a case the increased area is a measure of the increased heat, and;

$$\frac{D_2^2}{D_1^2} = \frac{100 - \textit{hot top}\ (\%) \times 0.75}{100 - \textit{hot top}\ (\%)}, \text{ or,}$$

$$\frac{D_2}{D_1} = \sqrt{\frac{100 - 0.75 \times \textit{hot top}\ (\%)}{100 - \textit{hot top}\ (\%)}}$$

Therefore, K_1 (for open top mold) $= K_2$ for

$$\text{hot top mold} \times \sqrt{\frac{100 - 0.75 \times \textit{hot top}\ (\%)}{100 - \textit{hot top}\ (\%)}} \qquad (7)$$

(4) Correction for taper—referring to fig. 14, a same mean transverse size (C) at midheight in the ingot, involving a same volume of steel and a same amount of heat, implies a (K) value—as measured in the top section—which is larger for the hot top ingot and smaller for the ordinary ingot, both compared to the ingot with no taper used as reference. For the hot top ingot K is increased in the proportion

$$\frac{C + \frac{L}{2} \times \textit{taper}\ (\%)\ \textit{on each side} \times 2}{C} = 1 + \frac{L}{C} \times \textit{taper}\ (\%)\ \textit{on one side.}$$

Consequently, to correct to "no taper"; (1) the K value of the hot top ingot has to be multiplied by

$$\frac{1}{1 + \frac{L}{C} \times \%\ \textit{taper one side}} \qquad (8)$$

(2) the K value of the open top ingot has to be multiplied by

$$\frac{1}{1 - \frac{L}{C} \times \%\ \textit{taper on side}} \qquad (9)$$

(5) Correction for corrugations—proceeding by elements along one corrugation, the method developed in this paper permits an estimate of

TABLE I

Time Required to Fill Various Sizes of Ingots with Molten Metal

Size Ingot	Volume under hot top, Cu ft	Time to fill up to hot top, Min
13 x 13 in.	4.915	1 (base)
17 x 17 in.	7.972	1.6217
Short 20 in. fluted (round)	6.905	1.4046
Long 20 in. fluted (round)	7.81	1.5888
Short 14 x 20 in.	4.9345	1.0039
Long 14 x 20 in.	5.925	1.2054

the increase in K value commanded by corrugations and a correction of their effect to the smooth ingot of same average size.

(6) Conventions—all Nelson's measurements for distances frozen refer to dimensions observed on the ingots after complete cooling and all formulae here developed are based on such an understanding. If the cold dimension is not available, it can be obtained with a small error by dividing the hot dimension by 1.03. Failing to do this would lead to a freezing time approximately 6 pct too high.

Yet it must be remembered that all ratios used to calculate the Z and K values are based on sizes at the time the ingot is poured.

In brief, the basic K values of Nelson's ingots are corrected as just explained and as noted in table II. These values have been plotted in the log-log chart of fig. 15, which leads to the following expressions: K for smooth round ingot $= 1.3739 \cdot Z^{0.219245}$, and K for square ingot with round corners of ave. radius = 11 pct the side of the square $= 1.25535 \cdot Z^{0.219245}$ (10, 11)

Computing the K value for the slab—From the above it seems obvious that (K_{slab}) is also of the form $K = m\,Z^{0.219245}$ and m can be determined from the case of the round cornered squares which are made up of two slabs and parts of round molds. But one must first solve the problem of the transposition of K value from the corner radius to the half side of the square commonly used for measurement. It has been seen that in flat ingots, for instance a K value expressed on a radial vector, can be transposed in strict proportion to another radial vector. The present case is different because the vector used to figure the K value of the round corner does not come to the center of the ingot. This can be analyzed as follows: Referring to fig. 17, the square ingot shown can also be considered as made up of two slabs, (AB and (EF) and a corner square (BCEL), having respectively the following K values:

$$K_{slabs} = \frac{m}{2}\left(\frac{a}{D}\right)^n = \frac{K_1}{2},$$

$$K \text{ corner square} = m\left(\frac{a}{\gamma}\right)^n.$$

With $\frac{D}{\gamma} = J$, $\gamma = \frac{D}{J}$, and K *corner square* =

$$m\left(\frac{a}{D}\right)^n J^n, \text{ or } K_1 \times J^n.$$

That is, the corner square has a K value which is boosted by J_n due to a relative wall thickness multiplied by J compared to the full section square having $K = K_1$.

To analyze transposition we must assume that all parts of the mold, but (BCE), are insulated and that, under (BCE) alone, solidification proceeds all around the full section up to the center (O). First, the efficiency of the small square in the whole system, that is the relative K value it commands, will be reduced in the proportion of the area (BCEL) to the area (ACFO), as will be considered in more detail shortly. Neglecting the efficiency for the present, it is as if the corner square were shifted at scale from (LB) to (OA) with its own K value. Then the transposition factor must be such that solidification reaches the center (O) of the full section.

TABLE II

Corrections to Basic K Values

	13 x 13 in. Ingot	17 x 17 in. Ingot	Short 20 in. Fluted Ingot	Long 20 in. Fluted Ingot
(K) Values, as per Fig. 11 (Corrected for Times Computed from Filling of Ingot)	1.1235	1.0650	1.10955	1.2419
L/C = Correction to L/C = 3, from Fig. 13 =	4.25 $\times \frac{1}{0.9905}$	3.25 $\times \frac{1}{0.9975}$	2.0 $\times \frac{1}{1.0176}$	2.6 $\times \frac{1}{1.0053}$
Hot Top, pct = Correction to Open Top Ingot through Equation (7)	10.3% × 1.0142	14% × 1.0201	17.7% × 1.0265	15.2% × 1.0221
Taper on Each Side = Correction to "No Taper" through Equation (8)	1.4218% $\times \frac{1}{1.06042}$	1.844% $\times \frac{1}{1.05993}$	2.57% $\times \frac{1}{1.0514}$	2.50% $\times \frac{1}{1.065}$
Corrected for Average Radius through Corrugations, Instead of Min Radius	......	......	$\times \frac{19.625}{19.250} = 1.0195$	$\times \frac{19.250}{19.000} = 1.0132$
Correction from Corrugations to Smooth Surface	......	......	$\times \frac{1}{1.0122}$	$\times \frac{1}{1.0202}$
Final Values Corrected to Time for Filled Ingots, L/C = 3, No Hot Top, No Taper, No Corrugations, but 1.00 pct C Steel	1.084948	1.027438	1.072426	1.17759

By simple multiplication of the two sides of the equations below one can write—

(A) $\gamma = K_1 \sqrt{T_1}$: $\sqrt{T_1} = \frac{\gamma}{K_1}$; and

$$K_1 = \frac{\gamma}{\sqrt{T_1}} \text{ or } \frac{H4}{AH} \text{ in Fig. 17 (or tan } \alpha)$$

(B) $\gamma J^n = (K_1 J^n = K_2)\sqrt{T_1}$: $\sqrt{T_1} = \frac{\gamma}{K_1}$; and

$$K_2 = \frac{\gamma J^n}{\sqrt{T_1}} \text{ or } \frac{H5}{AH} \text{ in Fig. 17}$$

(C) $\gamma J = D = (K_1 J = K_3)\sqrt{T_1}$: $\sqrt{T_1} = \frac{\gamma}{K_1}$; and

$$K_3 = \frac{D}{\sqrt{T_1}} \text{ or } \frac{H6}{AH} \text{ in Fig. 17}$$

These various equations represent various K values in the full section as illustrated in the graph of the left part of fig. 17. Obviously only equation (C) brings solidification to the center, while equation (B) represents the natural K value of the corner square. If V is the transposition factor, it must be such that it brings the K value of (B) to that of (C), or;

$$K_1 J^n \times V = K_1 J$$

giving,

$$V = J/J^n \qquad (12)$$

So far, we were used to the transposition factor $V = J = \frac{D}{\gamma}$ which has been used to bring equation (A) to equation (C).

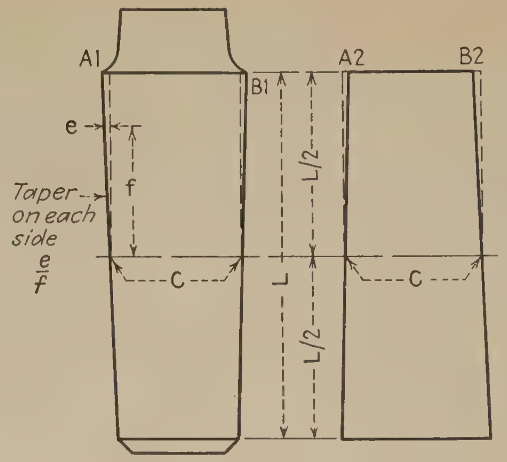


FIG. 14—Profiles of hot top and ordinary ingots showing influence of taper on K values measured in top section.

The equation $V = J/J^n$ can be verified by making the K value of the full square of fig. 17 equal to the sum of the K values of the two slabs and of the corner square, which is easy to do (one example of such calculations will follow shortly).

In case of rectangular section with

$$\frac{OA}{\gamma} = J_1, \ \frac{OF}{\gamma} = J_2,$$

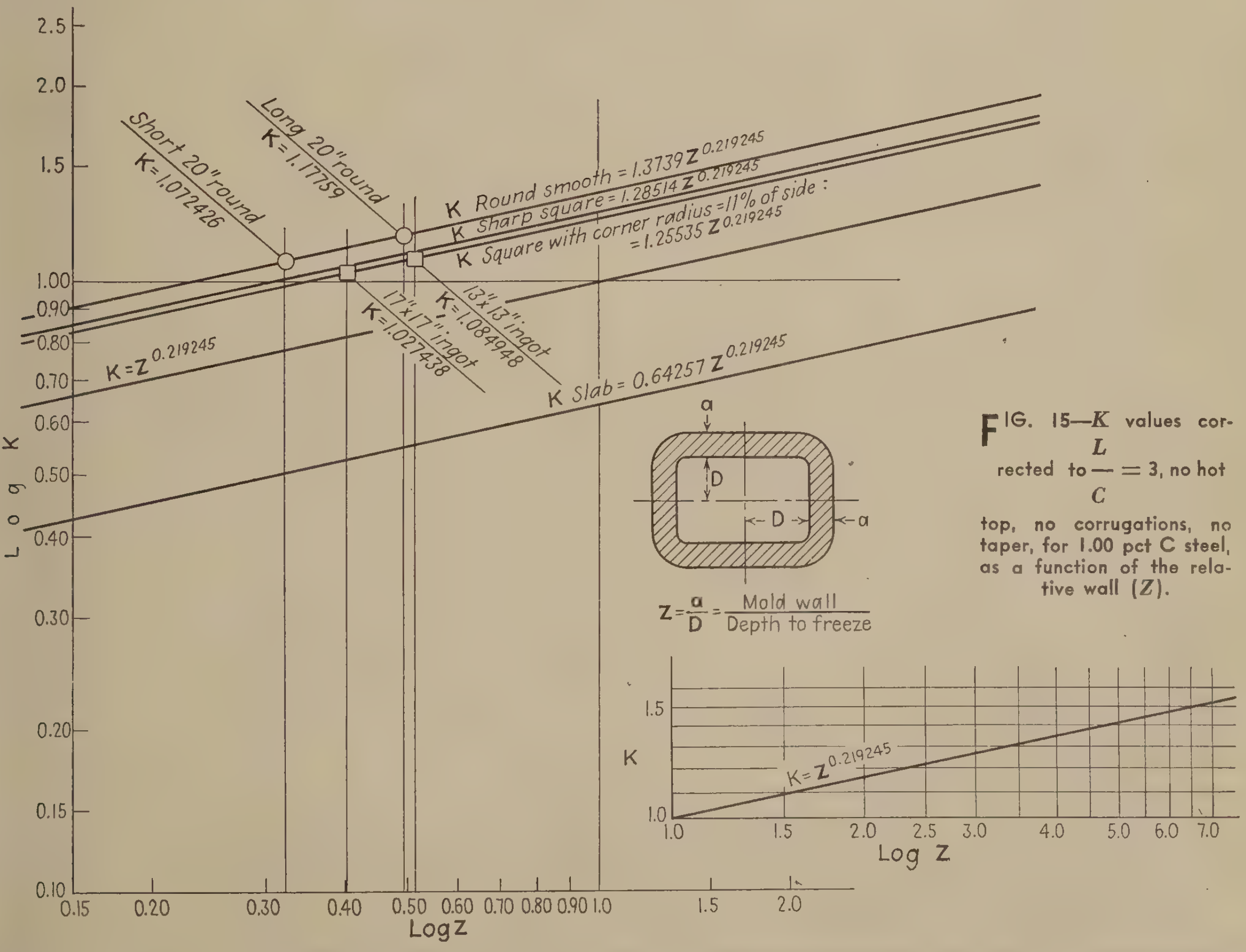
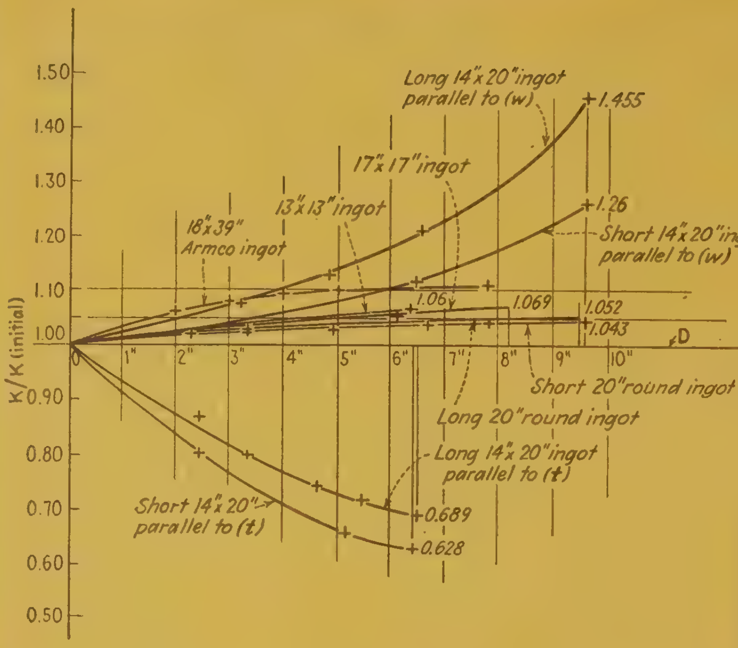


FIG. 15—K values corrected to $\frac{L}{C} = 3$, no hot top, no corrugations, no taper, for 1.00 pct C steel, as a function of the relative wall (Z).



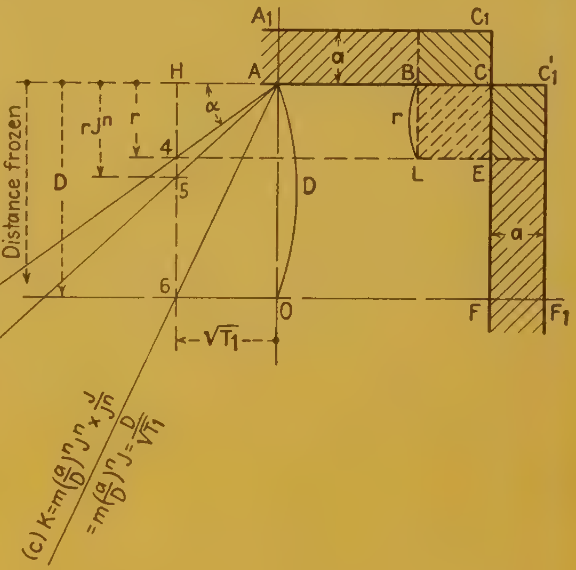
LEFT

FIG. 16—Variation of K up to time according to distance frozen from surface D for various ingots (Nelson).

○ ○ ○

BELOW

FIG. 17—Sketch indicating calculation of the transposition factor for a square corner in a square section.


A1
C1
α
B
C
C1'
H
A
α
rJ^n
r
r
4
5
6
Distance frozen
D
D
L
E
a
O
F
F1
$\sqrt{T_1}$
(a) $K=m\left(\frac{a}{D}\right)^n=\frac{r}{\sqrt{T_1}}=\tan\alpha$
(b) $K=m\left(\frac{a}{D}\right)^n J^n=\frac{rJ^n}{\sqrt{T_1}}$
(c) $K=m\left(\frac{a}{D}\right)^n J^n \times \frac{J}{J^n}=m\left(\frac{a}{D}\right)^n J=\frac{D}{\sqrt{T_1}}$

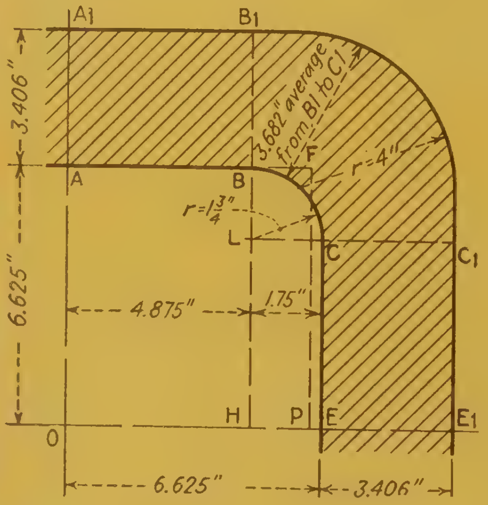

A1
B1
3.406"
3.682" average from B1 to C1
F
r=4"
A
B
r=1¾"
L
C
C1
6.625"
4.875"
1.75"
H
P
E
E1
0
6.625"
3.406"

FIG. 18—Freezing process of a 13x13-in. ingot, where $K = 1.084948$.

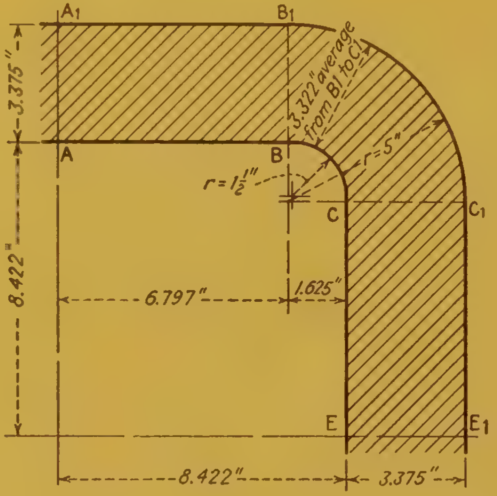
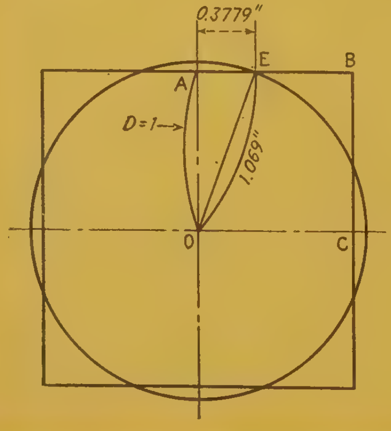

A1
B1
3.375"
3.322" average from B1 to C1
A
B
r=5"
r=1½"
C
C1
8.422"
6.797"
1.625"
E
E1
8.422"
3.375"

FIG. 19—Freezing process of a 17x17-in. ingot, where $K = 1.027438$.


0.3779"
A
E
B
D=1
1.069"
0
C

LEFT

FIG. 20—Determination of the relative sections of round ingots and sharp cornered square ingots freezing in the same time with the same relative wall.

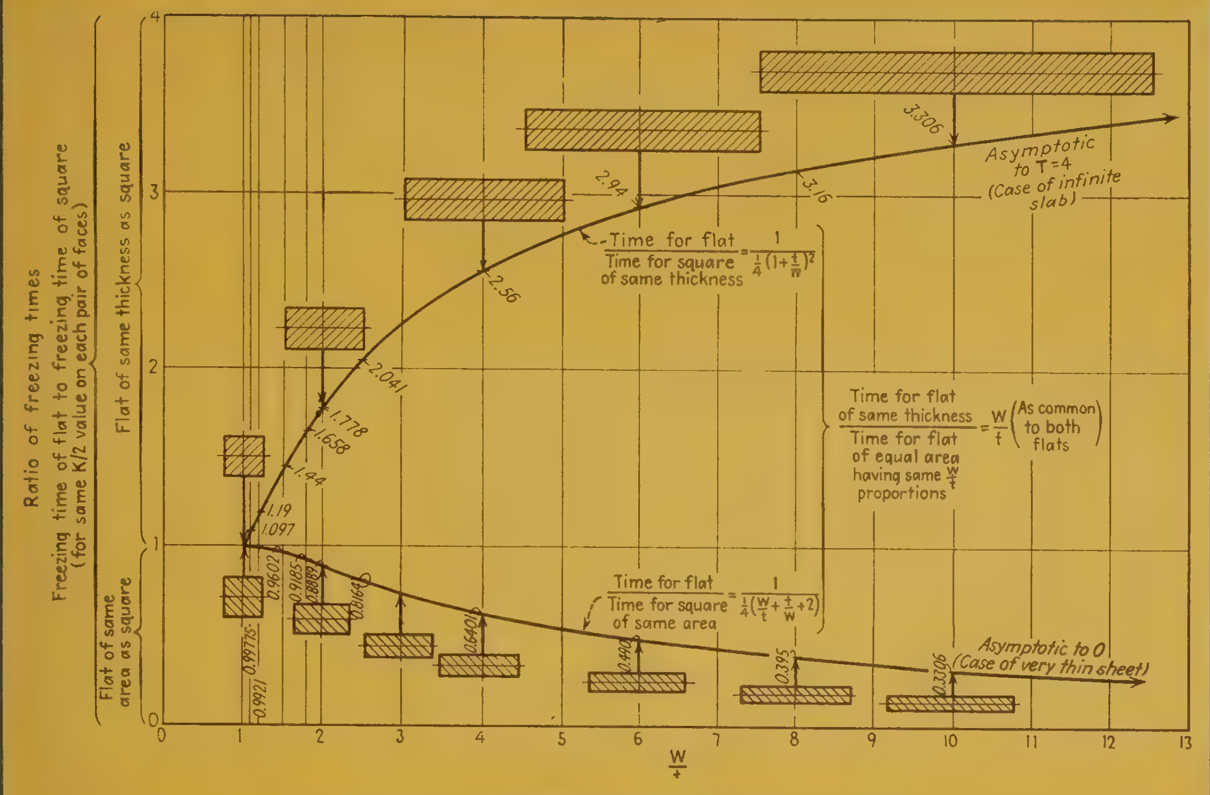


Fig. 21—Time of freezing curves for various types of ingots.

and (a) a constant, similar calculations indicate a transposition factor:

To $\left(\overline{OA}\right)$; $V = J_1 \times \frac{1}{2}\left(\frac{1}{J_1^n} + \frac{1}{J_2^n}\right)$ and

to $\left(\overline{OF}\right)$; $V = J_2 \times \frac{1}{2}\left(\frac{1}{J_1^n} + \frac{1}{J_2^n}\right)$

Obviously the same factors apply to round corners as well, because it is like transposing the circle of radius (r) to those of radii (OA) or (OF).

Deriving the K value of the slab from the K value of the 13 x 13-in. ingot: Referring to fig. 18, the element of wall (AA_1BB_1), flat and of even thickness obviously amounts to a plain slab limited to the length (AB). From the above its K value is of the form $K_{slab} = mZ^{0.219245}$ with (m) an unknown factor. To understand its influence in the freezing process, it may be assumed that all other parts of the wall, i.e., elements (BC) and (CE), are perfectly insulated and have no share in the cooling. Then, element (AB) acting alone, would have the cooling power indicated by $K = mZ^{0.219245}$ if the ingot section was limited to a slab having (AO) for half thickness and (AB) for half width. But the volume of steel is much larger and may be represented by a slab of ½ thickness = (AO) and ½ width

$$= AF = \frac{\text{¼ section area}}{AO}.$$

Thus, the efficiency of element (AB) compared to the above K value is

$$\frac{AB}{AF} \text{ or } \frac{OH}{OP}.$$

Similarly the round corner (BC) has a K value expressed by equation (10), an efficiency measured by; $\frac{\text{area ¼ circle } (LBC)}{\text{¼ section area } (ABCEO)}$, and a transposition factor given by equation (12). Thus the partial K values on (OA) really representing freezing powers, can be figured as indicated in table III.

The following fundamental relations exist, based on time computed from ingot fill $L/_c = 3$, no hot top, no taper, no corrugations, 1.00 pct C steel;

K for smooth round ingots $= 1.3739 \cdot Z^{0.219245}$ (10)
K for square ingot with corner radius = 11 pct the side of the square $= 1.25535 \cdot Z^{0.219245}$ (11)
K for sharp square with no solid corners (two slabs) $= 1.28514 \cdot Z^{0.219245}$ (14)
K slab (cooling power) $= 0.64257 \cdot Z^{0.219245}$ (15)

Significance of the above relations as regards the speeds of freezing associated with various mold shapes—From examination of equations (10) and (14), it is plain that the concave wall of the round mold is more efficient than the flat wall in the proportion; $\frac{1.3739}{1.28514} = 1.069$. This is obviously due to the fact that the concave wall offers more cooling material for the same surface of contact with the steel. Conversely, walls which are convex towards the ingot should be less efficient, but no examples are available.

Yet the above conclusion is an illusion from the standpoint of volume frozen, which can be shown by fig. 20. In this sketch, (OA) = D for the square is taken as unity. (K_{square} measured on (OA) would be as given by equation (14), but measured on another vector such as

(OE) it would be larger, until it would be 1.069 times larger and equal the K value of the round, for the same relative wall, for AE = 0.3779. Then the square and round sections as drawn, having point (E, in common, freeze in the same time. But the areas are 4.00 for the square and $\pi \times 1.069^2 = 3.5906$ for the round, or roughly nine tenths the area of the square. Thus, the square mold is really more efficient than the round mold of same relative wall.

The apparent contradiction with the former deduction can be easily explained. A circle and a round of same nominal size have the same ratio of cooling surface to volume $= \frac{2}{D}$. But the area of the circle is 3.1416, when it is 4.00 for the square. That is, the area of the circle is only 0.7854 that of the square, which is simply a geometrical effect. Then it is true that the concave wall is 1.069 times more efficient than the flat wall, but this superiority is not large enough to even up the original handicap of the circle and the square shape finally freezes more metal than the round shape solidifying in the same time. Back of this experimental result is probably the fact that the corners of a square are acting as ribs, or corrugations, to accelerate cooling, compared to the even shape of the round.

This leads to the case of the flat sections. It can easily be shown (through the method here developed) that a flat section freezing in the same time as a square, under the same K value all around, has also the same ratio of cooling surface to volume. The flat section can even have less cooling surface than the square if it is compensated by a larger K value on the wide faces, which have a predominating influence. Yet, for a same area and a same K value all around, the flat section freezes all the faster as the ratio of width to thickness increases, as illustrated in fig. 21. Obviously this is due, not to a greater surface volume ratio, but to the predominating influence of the wide faces and their shorter distance to the ingot center—which calls for proportionally shorter freezing times, as stressed at the beginning, but also for smaller K values as usually measured.

All told, for the same area and the same relative wall, the square freezes faster than the round and the flat faster than the square. If the respective K values were expressed on the average cooling vector, they would increase from round to flat, instead of ranging in the other direction, as now measured. This clears the apparent paradox pointed out at the beginning.

TABLE III

Calculation of Partial K Values, Representing Freezing Powers

Area one fourth section;

$$\begin{aligned} \overline{6.625}^2 &= 43.8906 \\ -\overline{1.75}^2 &= \underline{-3.0625} \\ & 40.8281 \\ +\frac{\pi}{4}\overline{1.75}^2 &= \underline{+2.405} \\ & 43.2331 \text{ sq. in.} \end{aligned}$$

Width of equivalent slab for element (AB)

$$\frac{43.2331}{6.625} = 6.5258$$

$$\text{Efficiency for (AB)} = \frac{4.875}{6.5258} = 0.7471$$

$$\text{Efficiency for round corner} = \frac{2.405}{43.2331} = 0.055627$$

$$\text{Transposition factor for (BC)} = \frac{J}{J^n} = J^{1-n} =$$

$$J^{0.780755} = \left(\frac{6.625}{1.75} = 3.7859\right)^{0.780755} = 2.82746$$

For (AB) and (BC) = K =

$$m\left(2 \times \frac{3.406}{6.625} = 0.514\right)^{0.219245} = m \times 0.86424$$

$$\text{For (BC)} = K = 1.3739\left(\frac{3.682}{1.75} = 2.1041\right)^{0.219245} =$$

$$1.3739 \times 1.177135 = 1.6173$$

Total freezing power

$$\begin{aligned} \text{AB} - .86424\, m \times (\text{Eff.} = 0.7471) &= 0.6457\, m \\ \text{CE} - .86424\, m \times (\text{Eff.} = 0.7471) &= \underline{0.6457\, m} \\ & 1.2914\, m \end{aligned}$$

K Total = 1.2914 m + 0.25439 = 1.084948 (See table II)

BC = 1.6173 × (Eff. = 0.055627) × (Transp. = 2.8276) = 0.25439

Then 1.2914 m = 1.084948 − 0.25439 = 0.830558, giving m = 0.64316.

17 × 17 in. ingot: K total = 1.027438. Applying the same method to fig. 19, gives m = 0.64198, leading to m av. = 0.64257.

Methods of applying K values to steels of various carbon contents will be indicated in a subsequent issue.—Ed.

Porcelain Enamel Adherence Tester

An APPARATUS for measuring the adherence of porcelain enamel to the base metal has been designed by the National Bureau of Standards and is described in the bureau's report No. 1129. The apparatus appears adaptable to other types of nonplastic coatings and additional developmental tests are under way.

Evaluation of adherence is now commonly made by a visual estimation of the percent of bare metal exposed when a sample is deformed in a specified manner. The bureau's apparatus will measure the extent of exposure by observing the electric resistance encountered by a large number of probes lowered onto the test surface. The porcelain enamel coating will serve as an insulator when intact, and only when a probe encounters bared metal will a circuit be completed. By using a large number of probes and counting the number which conduct a current during the test, an estimate can be obtained of the exposed area.

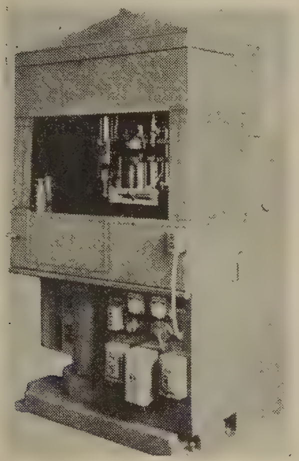
In operation a ground wire is clipped to the specimen and a test head is lowered onto the deformed area, springs adjusting the probes to the contours of the specimen. Then, a synchronous motor driving a selector switch actuates the probes individually while a relay operating a magnetic counter sums the number of completed circuits. The fraction of completed circuits then indicates the extent of exposure and gives an index of adherence.

New Equipment

Recent developments in vertical spindle and snagging grinders, horizontal presses and broaching machines, automatic screw machines, tapping units, heat-treating furnaces, a welding fume exhauster, work holding magnets, metal cleaners and coatings are reviewed herein together with utility and scoop-dump trucks, power turning rolls, and all-metal pallets.

Vertical Spindle Grinder

INTRODUCTION of a new type vertical spindle full hydraulic grinder designed for grinding faces of hedge shears, wood chisels, plane bodies and cutlery has been made by *Charles H. Besly & Co.*, 118 N. Clinton St., Chicago 6. The grinder features a feed fixture into which the rough forging is placed, the fixture then swinging down into the horizontal position advances to the grinding wheel, makes the required number of passes back and forth across the grinding wheel and, at the same time, feeds down mechanically. Upon reaching the micrometer stop screw, work automatically recedes from the grinding wheel and returns to the unloading and loading position. The number of passes across the grinding wheel, speed of the work, amount of hydraulic pressure exerted and speed of the downfeed are all subject to variation at the operator's option.

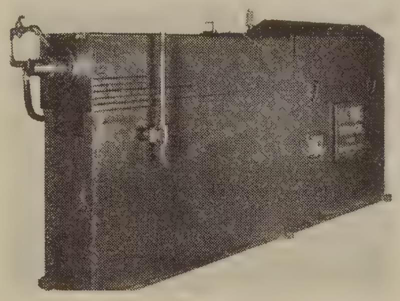


Horizontal Press

DESIGNED for rapid piercing, marking, forming and blanking of small components, a horizontal press is being marketed by *British Machine Tools (Export) Ltd.*, 367 Diamond Bridge Ave., Hawthorne, N. J. Its compactness in relation to the 10-ton pressure which it exerts is a feature and the horizontal design is said to facilitate any minor adjustments. It can be fitted with dial, roll or gripper feed and operated at from 70 to 200 rpm depending on the type feed used. Other features include a special type of clutch and automatic ejection mechanism of the completed workpieces. The machine is British made.

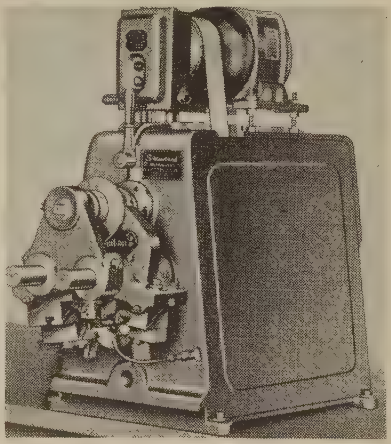
Horizontal Broaching Machine

MODEL H-4T-36S, horizontal broaching machine, available in 4-ton 36-in. stroke capacity and 2-ton 36-in. stroke capacity has been announced by *Acme Broach Corp.*, Lexington 21, Ky. The machine is equipped with dual cylinders, the main pulling cylinder being directly in line with the face plate bore of the machine. A high-speed return cylinder is mounted just above the main cylinder and is used only for returning the pulling slide to the front or starting position. The puller slide is fitted with adjustable take-up liners sliding on hardened and ground ways. A pull bolt that receives the broach puller is provided with a tightening nut which provides positive and rigid position for the broach puller, a feature said to eliminate broach breakage. The main cylinder and the high-speed return cylinder are steel sleeves finished and honed to a high polish. The machine is totally enclosed. Inspection of the motor, hydraulic pump and control valve as well as the complete unit is possible through the hood at the back of the machine.



Automatic Screw Machine

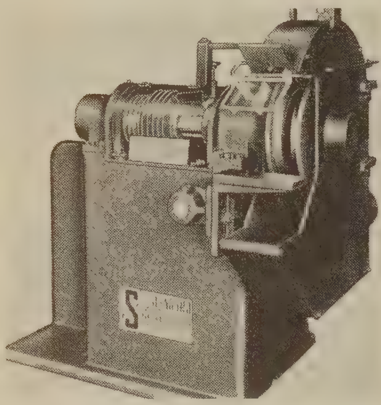
SAID to accommodate all normal screw machine operations with the exception of thread cutting, on stock up to 1-in. diam, the No. 2 automatic screw machine announced by *Standard Machinery Co.*, 1566 Elmwood Ave., Providence, offers compact size, setup on 24-in. spindle centers, high production rate through quick chucking and cam shaft speed up, and chip breaker designed on the principle of harmonic vibration. All tool settings, cam adjustments and controls are accessible at the front of the machine. The method of driving the feed cam shaft renders impossible the formation and clogging of long chips, it is reported. The basic machine, illustrated, performs two separate forming operations or a roughing cut followed by a finishing tool and a cutoff. Special attachments are available for drilling or boring. The machine can accommodate bar stock up to 1-in. diam. Control and movement of tools are provided at easily selected rates and without gearing. The stock ma-



chine provides for instantaneous advancement of bar materials up to 4-in. lengths.

Snagging Grinder

A 24-in. two-speed, 10-hp grinder for single-end snagging announced by *Standard Electrical Tool Co.*, 2505 River Road, Cincinnati 4, features interlocking speed control to prevent overspeeding of the grinding wheel. The door guard is made of boiler plate steel with adjustment to compensate for wheel wear. Equipment includes exhaust outlet, adjustable spark breaker and safety glass eye shield. The working surface of the work rest measures 4x9 in. The grinder is available for right or left-hand operation, for vitrified or resinoid bond wheels in sizes ranging from 10 to 30 in.



Automatic Tapping Unit

MODEL KT tapping unit has been released by *Govro-Nelson Co.*, 1931 Antoinette St., Detroit 8. No clutch, gears or lead screw are used in the unit. Centrifugal pressure provides the feed that automatically handles any number of threads per inch. Sensitivity of the feed is claimed to be such that tapping of 0-80 and 1/4-20 may be done without adjustment. With accurate tap, proper alignment and adjustment, the unit is said to produce class 4 threads. Design features include three-point ball bearing suspension and free rolling centrifugal weights. This model has a 1725-rpm spindle speed, max stroke of 1 1/4 in. and max collet capacity of 1/4 in. The unit is designed to handle tap sizes from 00-96 to 3/8-16 depending on material.

Heat-Treating Furnace

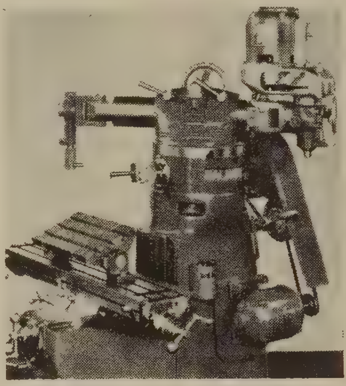
IN its 814-16 series, *Eclipse Fuel Engineering Co.*, 743 S. Main St., Rockford, Ill., announces a modernized version of its high-speed oven furnaces, for smaller tool rooms and shops. These units are fully enclosed and offered in two temperature ranges, 1400° to 1800°F and 2000° to 2500°F, for heat-treating carbon tool steel, alloy steel and high-speed steel. Advantages claimed for them are good uniformity of heat distribution, low heat loss and quick heat-up time. Lining is 4 1/2-in. insulating refractory brick backed with 2 1/2-in. insulating brick. Burner tuyeres, flue outlets and pyrometer opening are constructed with standard fire brick. Hearth is supplied in either silicon carbide or fire brick. Furnace shell is of welded sheet metal reinforced with structural steel members. Burner equipment is arranged in two manifolds. Furnaces are suitable for use with manufactured and natural gas.

Hydraulic Foot Pump

A LIGHTWEIGHT hydraulic foot pump designed so that the pedal return spring is built inside the pump body and the release controlled by slightly raising the pump pedal, has been introduced by *Lyon-Raymond Corp.*, 3838 Madison St., Greene, N. Y. Total weight of the pump is 13 1/4 lb. Working pressures up to 1500 psi can be obtained with this model. The usable oil capacity is 15 cu in., the oil being contained in a sealed reservoir requiring no vent thus allowing the pump to be mounted in offset positions if desired. Special features include a built-in oil strainer, an adjustable relief valve and a chrome plated piston.

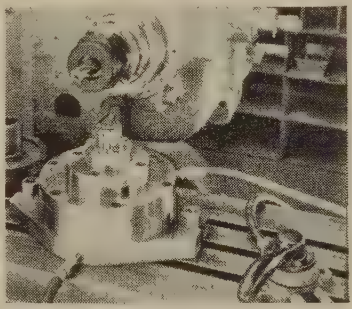
Milling Accessory

ENGINEERED for the Bridgeport vertical, the Malnar horizontal unit manufactured by the *Malnar Machine & Tool Co., Inc.*, 19301 St. Clair Ave., Cleveland 10, becomes an integral part of any model of the Bridgeport. This unit is designed to eliminate resetting from vertical to horizontal. The job is set up as usual and worked vertically with the Bridgeport which is swung away for work with the Malnar horizontal unit. The horizontal spindle is said to be strong enough for heavy end milling, fly-cutting, boring, drilling and other operations. The spindle is furnished with a No. 10 taper but any taper up to No. 40 is available. Spindle speeds are from 125 to 1800 rpm. Variable speed transmission is furnished with a 1-hp motor. Spindle speeds can be varied on a constant-drive pulley setup with a 7 to 1 reduction. A universal work table designed to fasten to the original table is also available. Work may be tilted from 0° to 45° in either direction.



Work-Holding Fixture

DEVELOPED to further increase accuracy of a standard Erickson precision chuck mounted on a milling machine, a special work-holding air-operated fixture incorporating a precision face plate mandrel has been introduced by *Erickson Tools Div.*, 2309 Hamilton Ave., Cleveland 14. The fixture is fitted with special locators for positioning the work part, so as to hold it square and concentric to the spindle. The pieces are located at a constant height and in the position desired in relation to the reference point on the work.



Electronic Rectifier

USEFUL for small dc motors, magnetic chucks or applications where direct current is required an electronic rectifier has been announced by *Weltronic Co.*, 19466 W. Eight Mile Rd., Detroit 19. It replaces motor generator sets where power from 750 to 2000w is desired. Voltage is 115/230 dc, 115/230/460 ac. Known as the Series WR-40-50-60, the rectifier features better ventilation, easier accessibility to parts, and simplified design. The control panel tilts forward for servicing. The rectifier is 18 in. wide, 12 in. deep, 24 in. high.

Welding Fume Exhauster

DESIGNED for use in welding operations where stationary ventilating systems are unavailable or impractical, a portable welding fume exhauster for operation in cramped quarters has been released by *Mine Safety Appliance Co.*, Braddock St., Pittsburgh 8. In operation, the intake end of the hose is placed approx 4 in. from the welding arc. The fumes together with slag and sparks are sucked out into the exhausted unit where it strikes a curved baffle in the settling or separating chamber and is said to lose over 20 pct of its solid impurities. The exhauster weighs 25 lb, is 34 in. long x 10 in. in diam.

Fast Welding Electrode

DESIGNED to increase welding speed on poor fit-up work, the No. 12 electrode has been developed by *Hobart Bros. Co.*, Hobart Sq., Troy, Ohio. This heavy coated electrode is for dc straight polarity or ac at higher current ratings. At higher currents, the spatter loss is unusually low and there is less tendency to stick when welding with a close arc, it is said. Electrodes are available in 3/32, ⅛, 5/32, 3/16 and ¼ in. diam.

Oil Standby Equipment

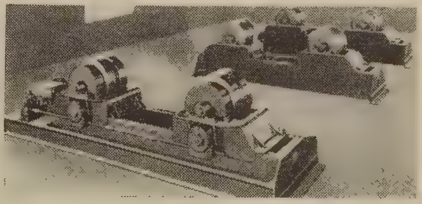
ANNOUNCEMENT of oil standby equipment for use with most of the company's gas burner equipment has been made by *Surface Combustion Corp.*, Toledo 1. The oil standby equipment utilizes No. 3 furnace oil or lighter and provides the same Btu input per hour as is provided with the gas burner equipment. It is reported, oil standby equipment can be quickly changed over during periods of gas curtailment.

Utility Truck

A PLATFORM utility truck having a 3 x 5½-ft platform and designed for handling awkward, manually loaded materials has been announced by *Truck-Man, Inc.*, 1425 W. Ganson St., Jackson, Mich. Construction is simple and rugged and features the Truck-Man principle of providing comfortable, easy riding for the operator. It has full high and low speed in forward or reverse and power is a Briggs & Stratton 2¼-hp gasoline engine. The truck will turn in its own length, which overall is 108 in., wheel base measures 72 in.; ground clearance 5½ in.; loading height 16 in. Capacity is rated up to 1500 lb.

Power Turning Roll

ANNOUNCEMENT of the addition of two machines to their line of power turning equipment has been made by *Reed Engineering Co.*, Carthage, Mo. These machines are power-driven turning rolls designed for rotating tanks and other cylindrical shapes for either manual or automatic welding. Designated as Models 250 and 500, these units have capacities of 25,000 and 50,000 lb respectively. They are equipped with variable speed drive and remote control operating switch. The rolls have totally enclosed gearing and are equipped with rubber-tired wheels. Separate power and idler units are said to provide increased flexibility and ease of handling. Where additional capacity is required, extra idler stands can be used to increase the above capacity by 50 pct.



Gas-Fired Heater

MANUFACTURE of a Palmaire 80,000 Btu input suspended type gas-fired unit heater designed for business and industrial heating has been announced by *Palmer Mfg. Corp.*, Phoenix, Ariz. Compact design permits low ceiling installations and corrugated steel heating elements are said to increase heat transfer efficiency. Other features are a slow-speed heavy-duty motor, choice of fan or blower, and accessible controls. The unit can be used also as an air ventilator. Thermostatic control can be provided for automatic temperature regulation.

Shut-Off Valve

QUICK-OPENING operation, leak-proof characteristics and heavy-duty construction are listed as features of a shut-off valve offered by *Saval Co.*, 1915 E. 51st St., Los Angeles 11. The valve is designed for butane and similar service and is also available for water or corrosive service with a heavy cast bronze body. The units employ a patented principle which provides a metal-to-metal seal that is self-aligning and automatically compensates for wear. It is said to have only one basic moving part and requires no lubrication or packing adjustment.

Metal Cleaners

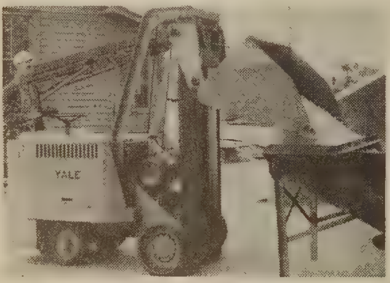
A LINE of metal cleaners has been developed by the *Parker Rust Proof Co.*, 2175 E. Milwaukee Ave., Detroit. The three classes of cleaners for steel, zinc and aluminum include emulsion, acid, and alkaline types. Parco cleaners which are specialized cleaners to meet varying specifications and conditions, are formulated to make hard water suitable for cleaning, to rapidly remove soil from metal surfaces, to condition them for fine, dense Bonderite coatings, and to remove rust and grease prior to painting.

Bright Cadmium Plating

ANNOUNCEMENT is made by *Hanson-Van Winkle-Munning Co.*, Matawan, N. J. of a new and improved bright cadmium plating process, said to have the advantages of increased brightness of deposit, higher tolerance for impurities, higher permissible current densities and improved covering power and appearance on rough and imperfect surfaces. Under optimum conditions, deposits are said to be mirror-bright as they come from the plating solution. A short bright dip may be used in order to compensate for variations of current distribution because of limitations in racking or because of the intricate shape of the article being plated. It also minimizes finger marking during assembly operation and it is claimed that a finished product which will pass inspection can be obtained with lower grade steel.

Shovel Scoop Truck

A SCOOP-DUMP electric truck which is useful in batching processes has been announced by *Yale & Towne*, 4530 Tacony St., Philadelphia 24. A lift mechanism lowers the scoop for self-loading and raises it to the desired height for dumping. In addition, a dump mechanism makes it possible to tilt the scoop at a wide range of angles and thereby regulate the rate of discharge. Otherwise, the electric truck embodies the same features of maneuverability, speed and simplicity of operation as the more conventional fork truck.



Temperature Recorder

A TEMPERATURE-recording instrument which determines temperature gradients in continuous porcelain enameling furnaces has been developed by *Ferro Enamel Corp.*, 4150 E. 56th St., Cleveland 5. This electronic three-point recorder is said to determine the exact temperature of the ware in the furnace and at various levels; also the difference in temperature of light and heavy gage ware, of furnace loadings and of burner adjustments. By means of the instrument, the actual ware temperature can be automatically recorded and the operator can set the furnace control instruments accordingly. In operation, the unit is hung on the conveyer chain and run through the furnace while operating at normal load. Three, 20-ft thermocouples are placed on the ware so the tip of the thermocouple is touching the ware at the point where temperatures are to be recorded. The instrument then records the temperature every three seconds throughout the length of the furnace, from preheating zone through the cooling zone.

Holding Magnet

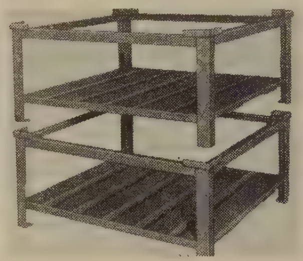
DESIGNATED as the Hold-Tite magnet, an electromagnet, for holding heavy castings in position under a swing grinder, has been developed by *Dings Magnetic Separator Co.*, 4778 N.W. McGeogh Ave., Milwaukee 14. The magnet holds castings of any shape securely, thereby eliminating the need for blocking, wedging or clamping. This unit is claimed to reduce over-all grinding time as much as 25 pct. The wearing plate on which the castings are placed is renewable. It is available mounted on a tilting trunnion with seven positions controlled by a foot lever, or can be supplied as a base magnet. The unit is built in two sizes with the magnet face 16x29½ in. or 16x16 in. Current consumption of the larger is 600 w, the smaller 400 w. Voltage required is 115 or 230 v dc. A hand or foot switch is provided to turn the magnet on and off.

Shop Microscope

BUILT to expedite numerous industrial operations where minute details must be closely observed, a new Spencer stereoscopic shop microscope has been developed by the *American Optical Co.*, Southbridge, Mass. Actually a microscope for each eye, the instrument provides both stereoscopic vision and magnification of minute parts and details in such operations as injection jet drilling, precision grinding, hand broaching, small parts inspection, die sinking and other toolmaking, fabricating and inspection processes. The magnified image is seen right side up and not inverted so that operations can be performed under the instrument. The optical system with converging objectives, achromatically corrected, clearly shows length, width and depth with enhanced perspective. Design of the instrument allows the operator to wear safety goggles.

Pallet Rack

AN all-metal, single-face pallet rack and nesting ring for use with power or hand trucks has been announced by *Palmer-Shile Co.*, 16005 Fullerton Ave., Detroit 27. Pallet racks are of special rolled channel steel with reinforced, all-welded channel support to permit easy handling of heavy loads. Steel legs provide adequate height to permit accessability from all four sides. Pallet racks can be furnished with nesting ring permanently welded to pallet.

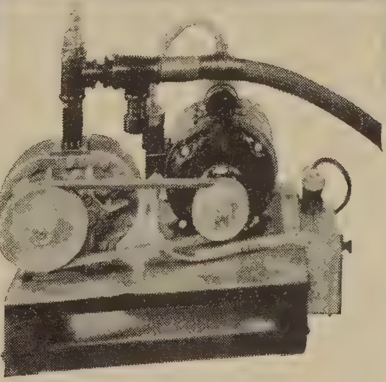


Synthetic Coating

DEVELOPMENT of a synthetic coating, which can be built up to extra-heavy thicknesses, has been announced by *United Chromium, Inc.*, 51 E. 42nd St., New York 17. It has been designed primarily to insulate and protect electroplating racks. The material, marketed as Unichrome Coating 218, contains 100 pct solids, with nothing to evaporate. It is a baking synthetic, applied by dipping or spraying, and upon curing at 350°F becomes a sleek, elastic coating. On some racks, thicknesses up to ¼ in. can be achieved within 2 hr, it is said. Coating 218 offers resistance to abrasion, aging, oils and corrosion.

Matched to a "T"...

by R-C dual-ability



When selecting air or gas-moving equipment, watch that most important point of matching it to the job. Capacity, pressure, drive, size, weight and other factors must be carefully considered, to give you satisfactory operation.

That's where R-C *dual-ability* goes to work for you. With small-to-large sizes and many styles of both Centrifugal and Rotary Positive designs, we can be completely unbiased in our recommendations. For instance, coke oven operation called for the large Centrifugal Exhauster illustrated (top, above), with capacity of 16,850 CFM. The compact, lightweight Rotary Positive unit exactly meets the need for a low-capacity, portable vacuum pump in the graphic arts industry.

Similarly, your needs can be *matched to a "T"* with our small or large Centrifugal or Rotary Positive equipment. Call on R-C *dual-ability* to help solve your air or gas-moving problems.

ROOTS-CONNERSVILLE BLOWER CORP.
710 Ohio Avenue, Connersville, Indiana

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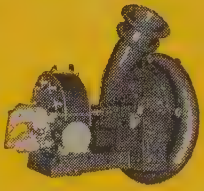
BLOWER BUILDERS · R-C · SINCE 1854
BLOWERS · EXHAUSTERS · BOOSTERS · LIQUID AND VACUUM PUMPS · METERS · INERT GAS GENERATORS
★ ★ ONE OF THE DRESSER INDUSTRIES ★ ★

VARIED REQUIREMENTS OF MOVING AIR OR GAS MET BY R-C EQUIPMENT

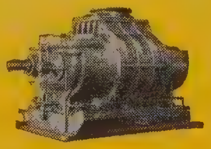


In foundries, steel and paper mills, chemical processes, sewage treatment, gas pipe lines and many widely differing jobs, R-C *Centrifugal Blowers and Exhausters* help make more goods for more people, economically.

Many engineers find *R-C Rotary Positive Blowers* better matched to the job, with their ability to deliver constant quantities of air or gas, regardless of varying outlet pressures. Our small, compact units are widely favored for built-in application.

You can closely account for air or gas, delivered or consumed, when you measure it with *R-C Positive Displacement Meters.* Their built-in accuracy needs no adjustments, can't be altered accidentally or intentionally.

Wherever natural or manufactured gases are used in processing, you'll find *R-C Rotary Positive Gas Pumps* delivering accurate quantities by the minute or the hour with unfailing regularity.



• • •

Working with you or your suppliers, we'll apply R-C *dual-ability* to match our equipment to your jobs.

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710 Ohio Avenue,
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BOOSTERS________ LIQUID PUMPS________
INERT GAS GENERATORS________
NAME________________
TITLE________________

Assembly Line . . .

WALTER G. PATTON

• Willys-Overland's second "Institution Day" brings record crowd of industrialists to Toledo for its new product announcements . . . Graham-Paige enters the stationary motor field.

DETROIT—In contrast to some of the independent auto producers who appear to be bent on testing their strength against the Big Three of the auto industry, Willys-Overland has pledged itself to become "a company serving the neglected needs of the automobile market." In the meantime, Willys is seeing to it that its relations with the public and industry are far from neglected.

Willys has hit upon a device—an annual Institution Day—that effectively reminds its stockholders, financial interests, suppliers, the press, representatives of labor and Willys dealers that the company is making definite progress toward its goal.

The second annual Institution Day held this week repeated last year's successful meeting, attracting more than 450 top-flight executives, educators and financiers.

Board chairmen attending the recent Willys meeting included, to name only a few, the chairman of Standard Oil Co. of New York, Air Reduction Co., Electric Bond & Share Co., Dow Chemical Co., Corning Glass Co. and Goodyear Tire & Rubber Co. Bank representatives coming to Toledo for the meeting included partners and executives from National City Bank of Cleveland, Kuhn, Loeb & Co., Lehman Bros. and other firms prominent in the field of finance.

Among the many representatives of Willys suppliers on hand for the occasion were the chief executives of Budd Co., Owens-Corning, Hayes Mfg. Co., Spicer Mfg. Div. of Dana Corp., Standard Steel Spring Co., Bendix Aviation Corp., Electric Auto-Lite Co., Motor Wheel Corp., Progressive Welder Co., Aluminum Co. of America, Eaton Mfg. Co. and many other prominent producers for the auto industry.

Steel producers were prominently represented by senior executives of Carnegie-Illinois Steel Corp., Sharon Steel Corp., Superior Steel Corp., Jones & Laughlin Steel Co., Empire Steel Corp., Republic Steel Corp., Copperweld Steel Co., American Rolling Mill Co., Wheeling Steel Corp. and Great Lakes Steel Corp.

Persuasive Jim Mooney, president and board chairman of Willys also induced people like Major General Hughes, Chief of Ordnance; Edgar Kobak of Mutual Broadcasting System, and Gene Tunney to come and inspect the house the Jeep is building at Toledo.

AT a morning press conference, Mr. Mooney outlined the company's position with respect to product policy, markets, labor, and plant extensions. Including three products scheduled for 1948 production, Willys has nine products, all direct descendents of the World War Jeep: the Universal Jeep, Jeep Station Wagon, Jeep Fire Engine, Jeep Sedan Delivery, 2-wheel and 4-wheel drive trucks. Scheduled for 1948 production are the new Jeep Station Sedan, Jeep Sports Phaeton and a 2-door and 4-door passenger sedan.

The all-steel Station Sedan is similar to the present Jeep Station Wagon, except that its interior fittings are more expensive and the upholstery is of the conventional car type. The instrument panel has been redesigned and brightened with chromium trim while the exterior has a decorative basket-weave section running around the body. The Station Sedan which is designed to sell at about $200 above the present station wagon, will be powered by a new 6-cylinder engine. Mr. Mooney emphasized the point that the price of the new model will be dependent upon the "price plateau" prevailing at the time the new model is introduced early in 1948.

The "Jeepster" phaeton sedan attracted a great deal of attention Painted fire-wagon red with cream striping and trim, the snappy new model is "designed to meet the demands of the youth of America.' The new convertible type Jeep wil use the station wagon chassis wit a reinforced frame. The familia Jeep front end has been preserved A gray canvass top, manually operated, is provided. The new Jeepste has no windows and side curtain are available for protection agains inclement weather.

Willys expects the new Jeepste to sell well below the average convertible model, but prices will no be announced until production get under way in March 1948.

THE new Willys 6-passenge car has progressed only to th mock-up stage and may never reac production if the company's plan are changed drastically before lat fall 1948 when production is scheduled to get under way. Nevertheless, the new model is interestin from several points of view.

In the first place the new mode emphasizes simplicity of desig that should permit important economies in manufacturing. Weight for example, of this 5-passenge model has been cut to 2600 lb. Th wheelbase is 104 in. The front en has been planned to establish quic identification of the car as a Willys-Overland. It has a V-type "grill mustache" in contrast to the prominent, flashy chromium front end o most models. This is a deliberat departure in styling design to emphasize Willys' position as an independent manufacturer.

Height of the present model i 62½ in., and overall length i 180½ in. The power plant will b a 6-cylinder, 70 hp motor now bein built for the station sedan. Glas areas are large and an unusua "flute" has been stamped into eac

PRATT & WHITNEY
4D DIE SINKER

WINS WARM WELCOME AT MACHINE TOOL SHOW

Thousands of die makers stopped, looked and applauded as they saw this versatile new machine performing its wonders at the great Chicago Show.

Another important FIRST

Hailed at the Chicago Show as a long-needed advance, the new P&W 4D Die Sinker fills the gap between conventional hand-operated machines and full-automatic reproducing equipment.

All machine motions are power operated, with infinitely variable speeds and feeds, *but* with *all* motions guided effortlessly by the new P&W "Directron" hand control. This device controls continuous compound movements in any direction in either a horizontal or vertical plane. Thus layout lines on a die surface can be followed more quickly and exactly than ever before.

Reproduction of certain impressions can be made from cross-section templates. This is done automatically with extreme accuracy through a tracer-control electric follower. In other cases, both electric follower and manual "Directron" control can be used simultaneously to duplicate die cavities from models.

Write today for complete details on this amazingly versatile new machine that opens up untold possibilities for making original forging dies, molds, etc. on new high levels of accuracy, speed and economy.

PRATT & WHITNEY

Division Niles-Bement-Pond Company
WEST HARTFORD 1, CONNECTICUT

fender to give decorative effect and provide stiffness.

In contrast to other cars, the front fender sections are joined in the middle behind the headlights. As a manufacturing economy the entire top from the cowl to the rear will be a single stamping, eliminating much of the extensive leading operation that is required in most popular cars today. The air vent on the cowl is unusually large and consists of a die casting that snaps snugly into place in the recess provided in the stamping. Hub caps are chromium plated although stainless steel is being considered. A stainless steel border is provided for the front windshield.

The new car is expected to give 25 to 30 miles per gal of gasoline and will turn in a 36 ft radius. Simplicity of decorative effects is being emphasized. Independent springing will be provided for either two or four wheels. Independent springing of front wheels only will be standard; however, a swinging axle in the rear will make it possible to provide independent springing of all four wheels as optional equipment.

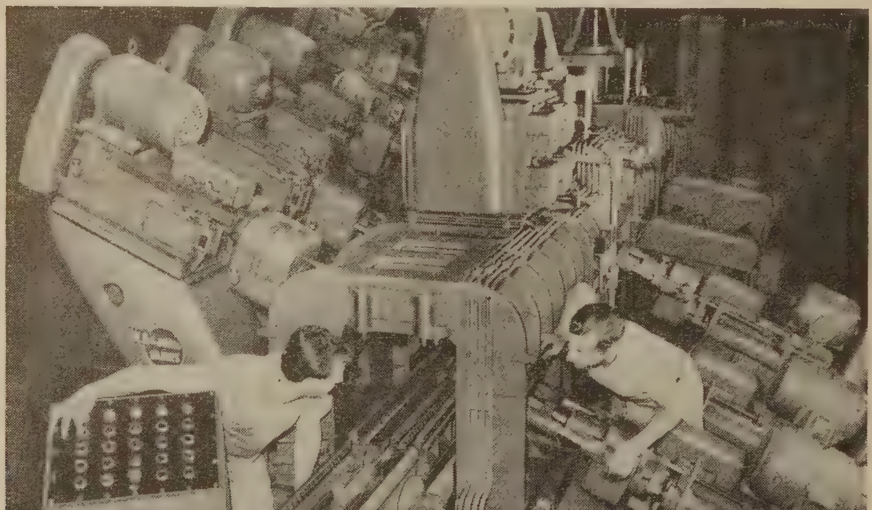
IN contrast to many other auto producers who are working furiously on new automatic transmissions, Willys engineers insist they have no plans for a change to automatic transmissions.

Willys plans to avoid completely what is regarded as "over-styling" of the modern automobile. This, according to Willys, only necessitates seasonal model changes which the company seeks to avoid.

There is a great deal of interchangeability of stampings among the present Willys models. The same front end is used on all models —the Jeep, station wagon, trucks, station sedan and the new sports phaeton. Willys' announced engineering policy is to give what it calls "maximum transportation per pound of steel and per gallon of gasoline." The company maintains it is not challenging the Big Three and claims to have no interest in innovations in car design that do not provide the maximum in transportation, simplicity and economy.

As of Oct. 7, Willys had assembled 168,781 vehicles since V-J Day of which more than 75 pct are Jeeps. The station wagon total is growing, however, and has now reached 31,350. Production goal for 1947 is approximately 120,000 vehicles and the 1948 schedules call for the assembling of 200,000 cars, trucks and station wagons. Willys indicated that the steel is in sight to meet these production schedules.

MODERN MACHINING: *This complex multiple drilling machine will be used to mass-produce Hudson's new super-six engine. The machine, which accomplishes 17 different operations, is controlled from the panel at the lower left. Eight six-cylinder engine blocks are carried continuously through the machine on the track.*



According to president Mooney, the company is still working on tremendous backlogs for all models with the station wagon output running far behind orders. Willys continues to sell more than 25 pct of its output abroad although, Mr. Mooney indicated that "some of the bloom" is fading from this market because of dollar exchange problems. Production plans call for the manufacture of approximately 10,000 sports phaetons and 12 to 14,000 station sedans in 1948.

GRAHAM-PAIGE Motors Corp. is planning to market the motor used in its Rototiller farm machines as a lightweight stationary motor for farm, home and light industrial applications.

The engine is 5 hp, two-cycle single cylinder gasoline type with impulse-coupled magneto.

According to J. W. Frazer, president, the motor may be used to provide power for home electrical plants and plumbing systems, for operating saws, hammer mills, concrete mixers, air compressors and other machines for small machine shops, light manufacturing operations and similar applications. Frazer expects to sell the engines for approximately $150.

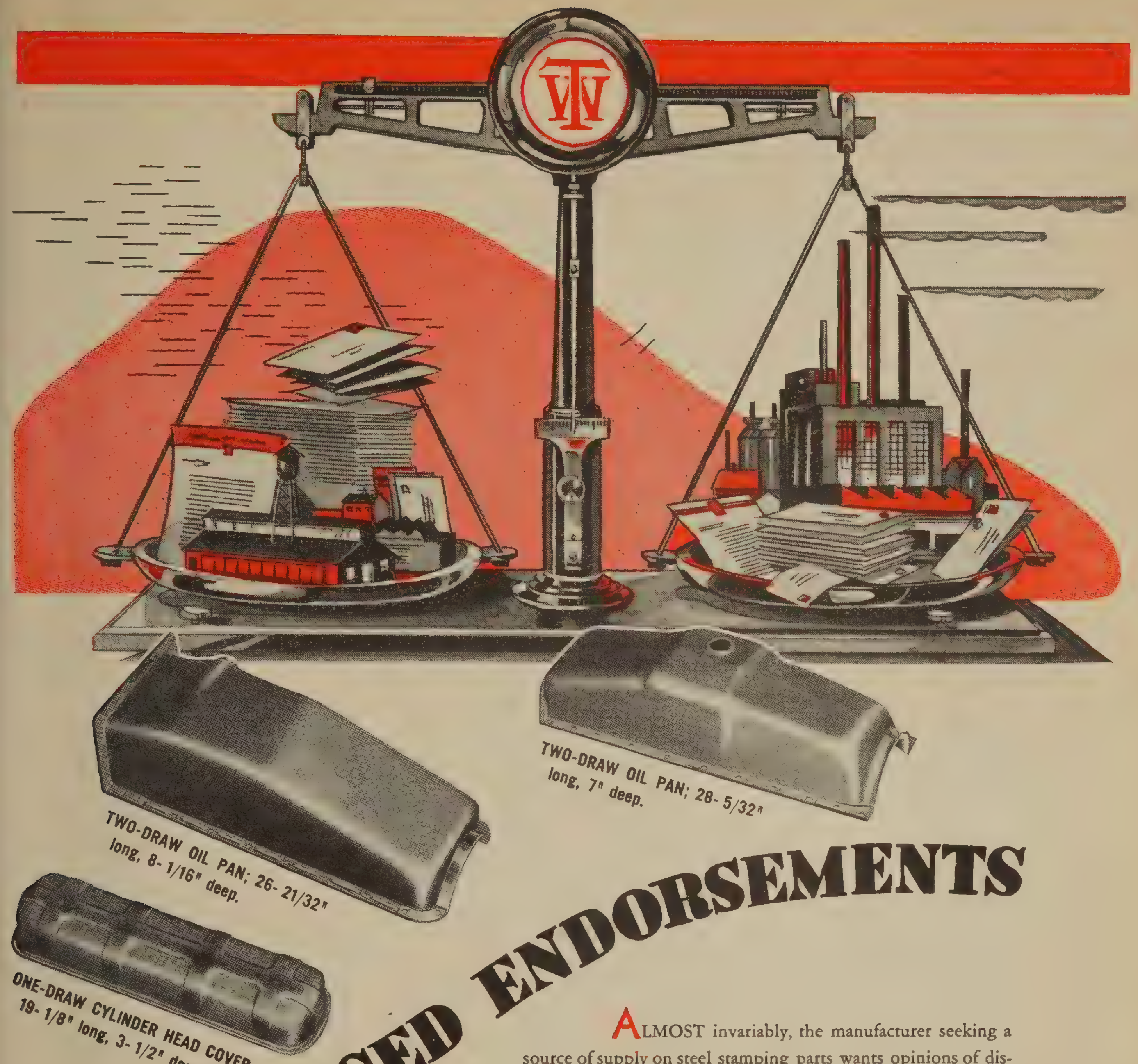
Raise for Some GM Skills

Detroit

• • • General Motors has announced the signing of agreements with both the United Automobile Workers Union (CIO) and the United Electrical, Radio and Machine Workers (CIO), providing for increases of 5¢ per hr for certain classifications of skilled maintenance men.

Approximately 15,000 skilled maintenance workers in General Motors plants, less than 5 pct. of the factory payroll, will benefit by the increase. It will become effective Monday, Oct. 20, providing the agreement is ratified by local unions.

In announcing the agreements, H. W. Anderson, vice-president in charge of personnel of General Motors, said that the increases were made to correct certain inequities which developed in some of the skilled maintenance classifications as a result of directive orders issued by the National War Labor Board.


TW
TWO-DRAW OIL PAN; 28- 5/32" long, 7" deep.
TWO-DRAW OIL PAN; 26- 21/32" long, 8- 1/16" deep.
ONE-DRAW CYLINDER HEAD COVER; 19- 1/8" long, 3- 1/2" deep.

BALANCED ENDORSEMENTS

ALMOST invariably, the manufacturer seeking a source of supply on steel stamping parts wants opinions of disinterested persons on reputations of stamping producers. It is a sound approach for the parts buyer who must rely on an outside supplier for such critical factors as unvarying accuracy, uniform physical properties and finish. Transue welcomes investigation of its own reputation. T & W parts users are enthusiastic in their endorsements of both Transue's rigid quality standards and reliable delivery. You will discover this important point about endorsements of Transue service, also—they come from a well balanced cross-section of parts users, show satisfaction among large and small buyers alike. Ask for names of Transue customers near you.

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Washington . . .

EUGENE J. HARDY

• Krug report sees Marshall Plan as short term drain on U. S. economy . . . No long term difficulties involved . . . Calls for increased steel ingot capacity to fulfill requirements.

WASHINGTON — Since the lack of steel is stalling domestic production as well as industrial recovery abroad, all foreign requirements must be weighed carefully before making any new export allotments, Interior Secretary J. A. Krug declared last week in making public an inter-agency study on natural resources and their relation to the Marshall plan.

The report saw the plan as having but little effect on resources in the long run; rather, the problem was held to be one of current demand and supply—who gets what, and when. "From the standpoint of preserving both the national security and our standard of living," Krug said, "our economy in general is physically capable of providing the resource requirements of a considerable program of foreign aid . . . However, certain shortages will be intensified. These . . . present the immediate problems of supply and consequent economic repercussions to be faced during the next year."

Because steel presents perhaps the greatest single domestic problem at present, he said, and since any "substantial" shipments to Europe would "aggravate the serious domestic supply situation, it must be made certain that each new export allocation "will do more good overseas than at home."

Retention of export controls through licensing was favored in the report on the grounds that not only do they protect the domestic economy but "assure availability of short supply items to areas of greatest need." Krug said they should remain in effect as long as there is a domestic shortage on any item proposed for export.

It was estimated that, including steel, nonferrous metals and metal products, about 25 pct of current exports are under licensing control.

Exports of iron and steel mill products for 1947 were estimated in the report at about 6,600,000 tons, plus an additional 3,900,000 to 4,800,000 tons in the form of fabricated products exclusive of the Marshall plan requirement. This latter figure, it was pointed out, must be established after the remaining two reports have been made.

A SECOND study is being made under direction of Commerce Secretary Harriman; it concerns the industrial situation and probable impact of the plan on domestic economy. The final study is supervised by White House advisor Dr. Edwin G. Nourse, and is to cover the financial and fiscal aspects of the relief plan. Both are due shortly.

In the Krug report it was said that indications were that 1947 steel ingot production would be some 6,000,000 tons short of rated capacity. If this idle capacity were brought into production, obviously a large part of the foreign steel problem would be solved.

"A considerable portion of the most urgent foreign demand is for various kinds of ingots and rough shapes for which adequate finishing capacity is available in the United States," the report stated. "The basic limiting factor to exports, therefore, is not finishing capacity but rather ingot production."

Pointing out that ingot capacity was decreased by 4,000,000 tons after the end of the war largely through the abandonment of dismantling of obsolescent equipment, the report states that some authorities differ with the American Iron and Steel Institute belief that virtually no such capacity can be brought back into operation. Continuing, the report emphasizes that this factual question must be resolved before any further expansion gets underway.

It was recognized, however, that scrap and pig iron shortages are basic factors in additional ingot production. Like ingot output, pig iron output was found to be running at less than capacity. Pig iron potential was estimated at about 64.7 million tons but indications were that output is not exceeding 90 pct—leaving unused capacity of better than 6 million tons.

This, the report stated ruefully, is largely due to blown out furnaces, some of them government-owned because of poor conditions, coke shortages, and similar difficulties. Others were running below capacity because of high costs.

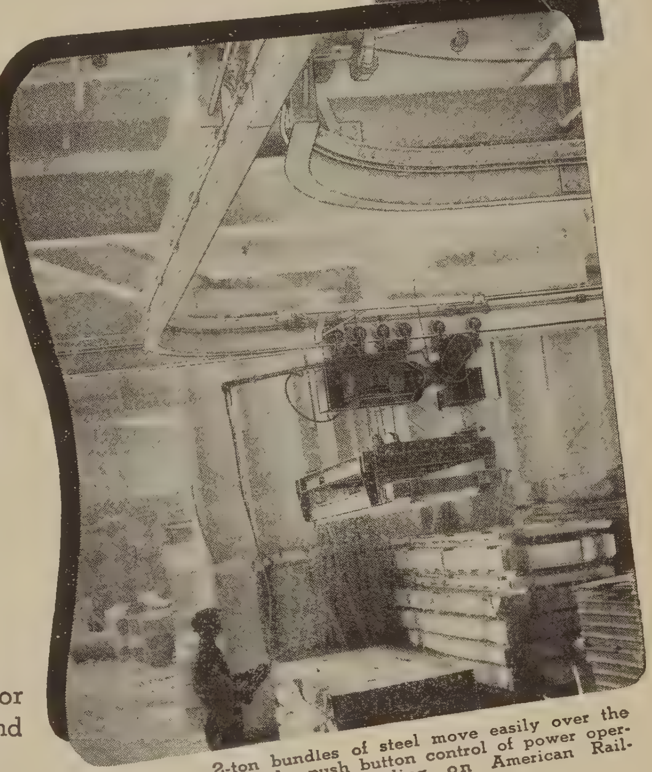
IT was indicated to the study group that continued high rates of production should generate sufficient industrial scrap to provide for the current 85 million tons of ingot production; scrap for additional output was seen as difficult to obtain. It was believed, however, that the best prospect for added scrap lies with stepping up of the campaign to make available for use the remaining domestic war surplus scrap materials. Combined effort on the part of both government and industry was urged in order to accomplish this.

Mention was made of the fact that the steel industry has underway an expansion program which will increase capacity by 2.5 million tons. However, the report holds this program to be inadequate to meet future needs; it estimates 1952 requirements, both foreign and domestic, will amount to at least 71 million tons of finished steel—under full employment conditions. To meet this demand blast furnace capacity will have to be increased by 1,300,000 tons, steel furnace capacity by 5,000,000 tons, and rolling mill capacity by 4,000,000 tons, according to the report.

"This demand is conservatively

Steel goes UP and OVER

Sheet steel is picked up from truck by a special grab and electric hoist. American MonoTractor propels the load across the jib and into warehouse..



2-ton bundles of steel move easily over the stacks by push button control of power operated carrier traveling on American Rail-Master Track.

Hundreds of plants are eliminating much of their floor congestion by installing American MonoRail "Up and Over"* Handling Systems.

In these particular plants steel goes up from truck, is transported overhead, and stacked in high piles for subsequent fabrication. Increased production at lower costs has resulted.

With "Up and Over" type of handling, from receiving to shipping, an overhead track or crane system does a better, quicker job with less maintenance.

Let an American MonoRail engineer show you how an overhead system will increase your production and pay for itself in a very short time.

* "Up and Over" is the title of our 16 MM, sound, twenty minute movie..gladly loaned upon request.

THE AMERICAN MONORAIL COMPANY

13103 ATHENS AVENUE
CLEVELAND 7, OHIO

estimated," the report declares, "because of the nature of the formula used. It neither gives attention to pent-up demands nor does it attempt to indicate when the pent-up demand will begin to taper off and current demand begin to take up the slack."

However, the report also goes on to warn against attempting to increase capacity too rapidly in view of the extra drain that would be placed upon the already short supply of steel.

"Such construction would require steel that is critically needed here and abroad," it was stated. "The use of steel in expansion of capacity should be properly timed and geared to the availability of raw materials and to the supplying of other critical requirements of available steel."

Not to be overlooked in the demands for expansion, according to the report, is the availability of raw materials—pig iron, coke and scrap.

"Before new furnace facilities are constructed with resulting use of large quantities of needed steel," it is emphasized, "maximum efforts should be made to obtain added production from existing furnaces through use of oxygen in open-hearths and by other improvements in operation."

No effort is made to predict how long the foreign shortages will last; nor did the study group feel that it would be practical to try to project needs for longer periods than three years.

"Sixteen European countries," it was stated, "now seeking aid have announced the following target figures for ingot production by 1951:

"United Kingdom, 15 million tons; France 12.7 million; Belgium and Luxemburg, 7.9 million; Italy, 3 million; Germany, (American-British zones) 10 million; the Saar and French zone in Germany, 2.7 million; others, 4.1 million—a total of 55.4 million metric tons."

POINTING out that the steel shortage is world-wide, the report expects foreign needs to remain relatively high, even after European plants get into production again. Coal, it is found, is not as much a problem of meeting requirements as one of transportation.

With European coal output currently 25 pct below prewar production, it is estimated that the continent could use about 100 million tons this year. At current rates, American production is expected to run around 660 million tons.

Since U. S. and Canadian consumption is estimated this year at 627 million tons, sufficient additional coal could be mined to meet European needs if there were adequate transportation. The most critical coal shortage is expected to end next year.

United States Ability to Meet Foreign Aid Requirements, Selected Commodities

(In terms of effect on domestic economy)

Should not cause undue drain:

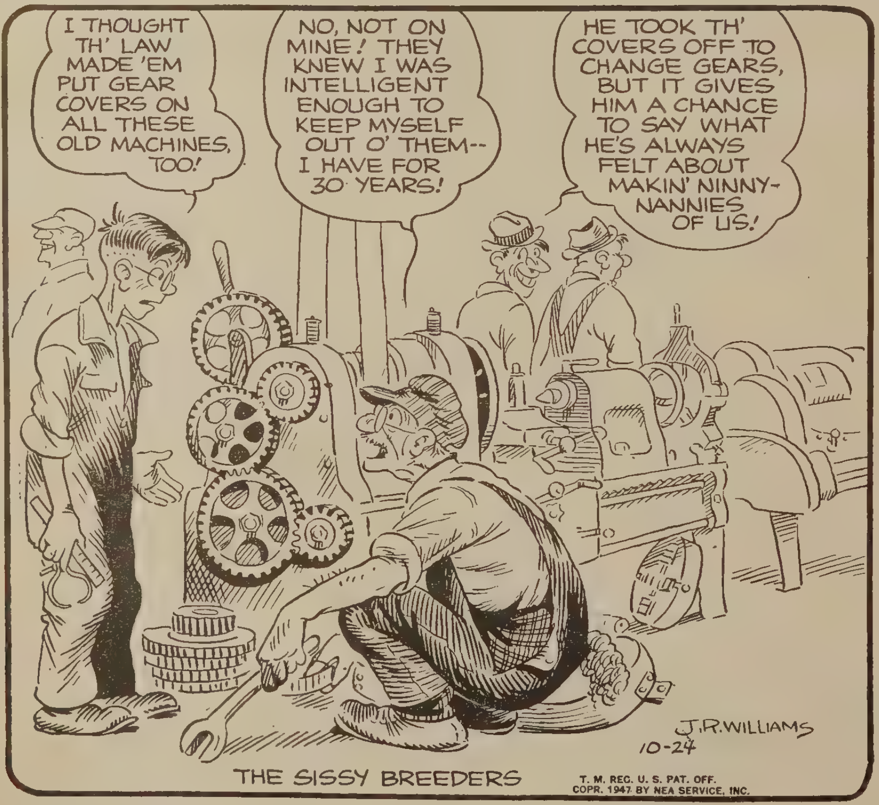
Coal, except for coals of coking and by-product quality
Aluminum
Magnesium
Copper, if capacity production levels are resumed and maintained
Tin
Zinc
Manganese
Molybdenum
Nickel
Vanadium
Antimony
Cadmium
Mercury
Farm machinery
Machine tools
Railroad locomotives (steam and diesel)
Motor trucks, truck-trailers and buses

Might be difficult to meet requirements.

Steel
Lead
Chromium
Tungsten
Mining machinery
Railroad freight cars

SOURCE: Inter-agency report, "National Resources and Foreign Aid."

THE BULL OF THE WOODS BY J. R. WILLIAMS


I THOUGHT TH' LAW MADE 'EM PUT GEAR COVERS ON ALL THESE OLD MACHINES, TOO!
NO, NOT ON MINE! THEY KNEW I WAS INTELLIGENT ENOUGH TO KEEP MYSELF OUT O' THEM-- I HAVE FOR 30 YEARS!
HE TOOK TH' COVERS OFF TO CHANGE GEARS, BUT IT GIVES HIM A CHANCE TO SAY WHAT HE'S ALWAYS FELT ABOUT MAKIN' NINNY-NANNIES OF US!
J.R.WILLIAMS
10-24
THE SISSY BREEDERS
T. M. REC. U. S. PAT. OFF.
COPR. 1947 BY NEA SERVICE, INC.

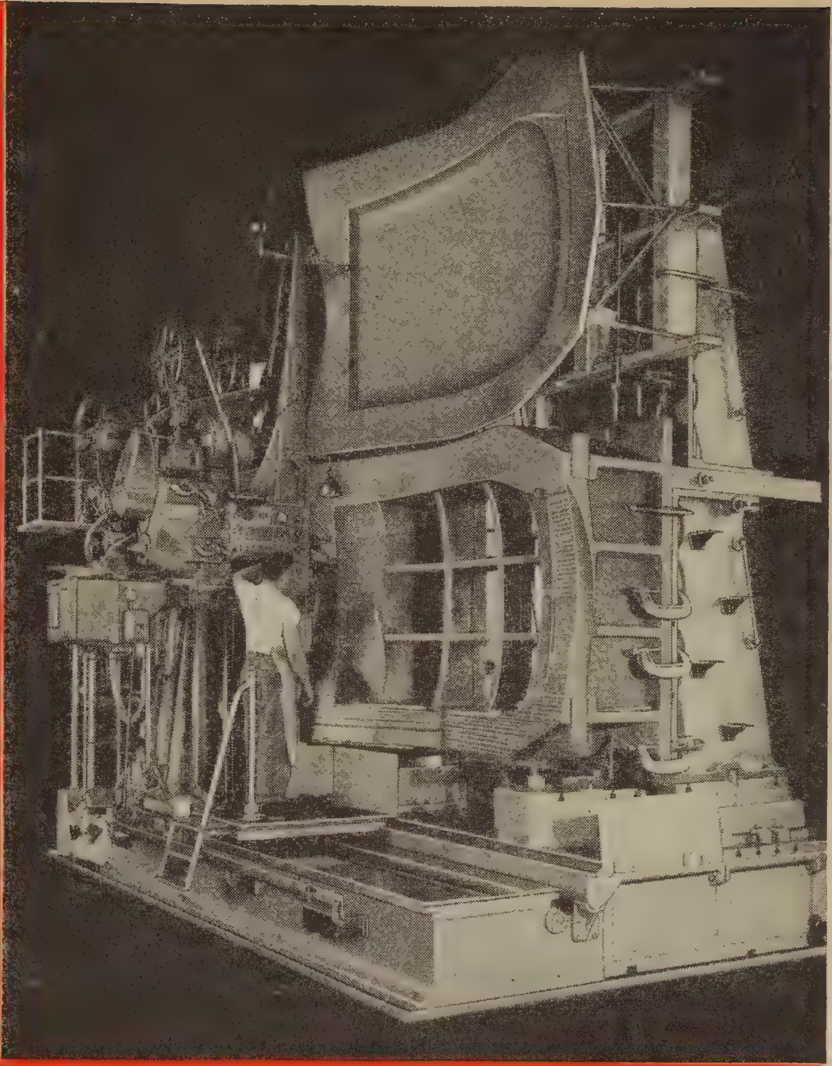
J. K. Gustafson to Head AEC Raw Materials Div.

Washington

• • • **Procurement of raw** materials required in atomic research will be administered by the Atomic Energy Commission's new raw materials div., of which Dr. John K. Gustafson is director, AEC has announced. Dr. Gustafson will assume his new duties about December 1.

At the same time, the commission announced appointment of an advisory committee for exploration and mining. Members of this committee are Donald H. McLaughlin, of Homestake Mining Co.; G. Temple Bridgman, of San Francisco; Everette L. DeGolyer & McNaughton; Anton Gray, of Kennecotter Copper Co.; Wilber Judson, of Texas Sulphur Co.; Robert E. McConnell, of McConnell Foundation; and Fred Searls, Jr., of Newmont Mining Corp.

BIG DIES



Auto Turret Top Die Ring

DIEMAKERS SINCE 1906 TOOLMAKERS

specialists

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West Coast . . .

ROBERT T. REINHARDT

• Survey of California foundry sands presented at chemical exposition . . . Geneva held to 90,000 ingot tons per month by coal shortage . . . Seattle steel foundry business slumps 40 pct.

SAN FRANCISCO — California boasts of about 20 deposits of natural bonded sands and seven sources of clay-free sands suitable for foundry use, according to P. C. Valentine, sales manager of the Del Monte Properties Co. who was scheduled to address delegates to the Pacific Chemical Exposition here today.

Because of the high cost of transportation the natural bonded sands are being recovered on a small scale and their wide and general use is limited according to Mr. Valentine. The speaker also indicated that unless a quality molding sand is found in this state there will be an increase in the use of synthetic sands which give greater opportunity for control and consistency of analysis.

Some of the deposits of natural bonded sands in California have been worked for more than 30 years and are still producing. These deposits are scattered from Riverside County in the south to Alameda County in the north.

In his comprehensive study, Mr. Valentine lists these deposits and their characteristics as follows:

Alameda County: Livermore "ganister" a mixture of high silica sand and refractory clay. It is used as a rebonding agent for worn out sand heaps and creates a greater durability in the sand mixture. This sand is also used for furnace and ladle linings.

Los Angeles County: "Los Angeles Heavy" molding sand is used in producing large iron castings. The deposit has been worked for many years and is located in the vicinity of Effie St. and Bishops Drive, Los Angeles.

Torrance "Lobond" sand has a very favorable grain distribution for iron castings and is satisfactory for producing a blended sand by mixing it with other sands or with other clay binders.

Orange County: Trabuco "ganister" or "Granite," another material which is highly refractory and used to revive weak molding sand and also to line ladles and furnaces. It is located near Trabuco Oaks. "Santa Ana" molding sands are produced in several grades from deposits near Trustin. These are sold under several names such as: "Santa Ana light"; and "Del Mar," for the fine sands. The coarser sands are known as "Donco heavy," "Santa Ana heavy" and "F-6." Some blended sands are also produced from these deposits.

Riverside County: "Riverside Sand" also known as "V3" and "Pedley" sand is found west of the city of Riverside. It is used chiefly for light iron and brass castings.

San Diego County: "San Diego Sand," a very fine grain sand used for light brass and aluminum. The deposit is located opposite the 2700 block of Arroyo Drive in San Diego.

SAN MATEO COUNTY: "Millbrae Blended" molding sand a relatively recent discovery. Extensive deposits of this material were uncovered in the large excavations supplying the fill for the San Francisco airport. It is suitable for light iron and nonferrous work. "San Francisco 440," a medium to heavy molding sand suitable for iron casting. The deposit is in South San Francisco and has been used for many years.

San Francisco County: "Mission Red" molding sand used extensively for heavy iron castings. It has been used for over 50 years. This is one of the best known natural bonded sands in Northern California.

Sacramento County: "Sacramento Red" very high clay content. Used for heavy iron castings. This sand contains enough clay for making brick. It is located on the outskirts of the city of Sacramento.

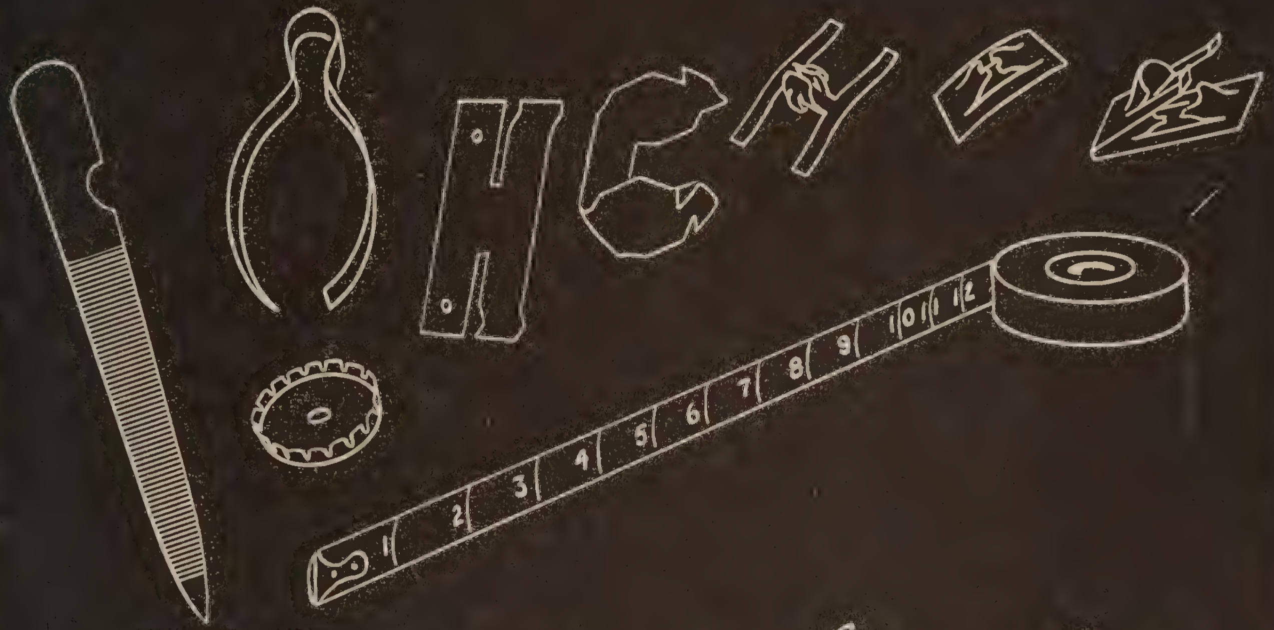
Santa Barbara County: "Santa Barbara molding sand," a fine sand used mostly for nonferrous work. The deposit is located near Goleta. "Lompoc molding sand," a highly permeable sand with an unusually favorable grain distribution. The deposit is located between Lompoc and Buelton.

Ventura County: "Ventura molding sand," a fine sand used for many years in iron and nonferrous foundries. The deposit is located near the 200 block of Aliso St., Ventura.

MR. VALENTINE describes the seven deposits of clay free sands, known as core sands, as follows:

Contra Costa County: Antioch—"Marchio sand" is obtained about 8 miles south of Antioch. This sand is excellent for cores and synthetic sands used in producing iron castings. It is also refractory enough to make fair steel sands. Pittsburg—"Roberts Brothers' sand" is similar to the Antioch sand and used for the same type of work. These two types of sand are quite comparable. They run in silica from 93 pct to a maximum of 97 pct. It is used by most of the steel foundries in the Bay area with considerable saving to these steel foundries who use it. It is the only deposit in California that is producing and selling to the steel foundries and their market is confined to the Bay area only. The southern California steel foundries depend on sand shipped from Ottawa, Ill. While this sand is expensive, it has the virtues of being a high silica content sand and ideal grain size. The silica content runs consistently 99.25, or better.

Monterey County: "Del Monte sand" located near the beach at Pacific Grove. This is one of the most uniform sands produced in California. It is widely used in foundries for making cores and synthetic sands. The sand is not refractory enough for steel castings. "Lapis No. 2 Sand" comes



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from Lapis, Calif. This is a very coarse sand used to promote high permeability in large cores and to increase permeability in old burnt foundry sand.

Los Angeles County: "Redondo Dune." A dune sand found along the Pacific Ocean. This sand is not processed before shipping, but is shipped directly from the dune.

San Luis Obispo County: "Oceano Beach sand," a very uniform sand suitable for making cores in iron and nonferrous foundries. The deposit is located on Roosevelt Drive at Oceano.

San Francisco County: "San Francisco Dune sand" comes from sand dunes in the city of San Francisco. This sand is very popular for core work in nonferrous foundries.

SALT LAKE CITY—Geneva Steel Co.'s coal supply situation is growing steadily tighter and there is little hope for improvement until after the first of the year.

No. 1 problem is railroad cars, which have been in short supply since the end of the war and the shortage is being aggravated by diversions to the sugar beet harvest, which will continue until the end of the year. Another factor is inadequate housing at Dragerton, the Geneva mine townsite. To relieve this situation the company has started construction of 100 more homes and hopes to have them completed within the next 5 or 6 months.

The company is currently getting about 4500 tons of coal daily. To get up to a production of 100,000 tons of ingots per month, which is the goal, 6000 tons of coal per day would be required. The question for the next few months will be whether the 4500 ton per day rate can be maintained.

The plant is now producing between 85,000 and 90,000 tons of ingots per month, rolling 50,000 tons of plate and 17,000 tons of structural shapes and billets.

One of the three blast furnaces has been down for repairs and will not be blown in again until the coal supply improves.

LONG BEACH—Tooling for a new trailer coach, which embodies wartime technical advances in lightweight metals, has been announced by the Kit Mfg. Co.

The trailer is of semimonocoque construction and uses aluminum alloy formed sheets of high strength properties. Substituting for the conventional trailer frame of heavy steel channels is a corrugated under-floor structure with wheel and hitch support units locally secured to the monocoque shell structure.

Internal wall and roof structural members consist of high strength aluminum alloy extruded zee sections located and spaced to provide adequate support to the body sheet shell. The entire body is designed to permit separate construction and later assembly of each major component, such as floor, sides, roof, front and rear ends.

Wheels are independently sprung to give improved road stability and high road speed. Springing is accomplished by alloy steel torsion rods which provide a low spring rate and permit a low-hung body.

The external styling somewhat resembles that of a streamlined railroad passenger car. Its sides and roof structure are corrugated for efficient use of the covering material as well as for style.

To take care of expanding production the Kit Co. recently acquired the $750,000 Harvey Machine Co. plant in Long Beach, from which over 300 trailers of all sizes are manufactured monthly. A new production line is being set up to turn out about 30 trailers a month of the new type which is expected to sell for about $2000.

Company officials claim that today Kit Mfg. Co. is the fifth largest trailer manufacturer in the United States. C. W. Worman is president. W. L. Dieter, formerly associated with Consolidated-Vultee and the Willys-Overland Co., supervised design and construction.

SEATTLE—That backlog which once looked so round, so firm and so fully packed with orders for the steel and nonferrous metal foundries of this area apparently is nearly burned out.

Steel foundries generally report a cutback of 40 pct to 45 pct in their production as compared to a year ago and most of them are operating on a 4 day week to retain their complete personnel during what is hoped to be a temporary slump.

A pessimistic attitude prevails generally among foundry men although a few are still working on accumulated orders. The decline in business began in the late summer and it is hard to find substantiation for the hope for increased business in the immediate future. Many of the northwest steel foundries have been producing castings for logging and fishing industries and with winter coming on, many small logging operators will have to close down because of the weather, and the fishing fleet just isn't active during those months. Informed observers believe that it will be at least spring before foundries can hope for improved business.

In searching for the cause of the decline in this industry, it is difficult to find anything specific. One of the most logical answers seems to be that unbalanced steel production in general is affecting the demand for castings because of the difficulties of buyers to maintain anything like definite production schedules. Consequently, if this is true foundry business will continue to be spotty at the best.

BRASS, aluminum and bronze foundries are about in the same position as those casting iron and steel. About half of the local nonferrous metal foundries are on a 4 day week and others are reducing the number of employees although continuing on a 5 day week.

In explaining the slump in the foundry business in this area one of the operators said, "We are pricing ourselves out of business, labor is up too high, our raw products are costing us too much so we have an item that the consumer can't afford to use. To price it where we could sell the product, we'd have to lose money."

Seidelhuber Iron & Bronze Works optimistically continues to lay plans for a steel sheet mill. No construction has been started, no ground has been broken and no equipment purchased, but Frank Seidelhuber, Jr., states that plans are going forward for a mill which will, they hope, produce approximately 7000 tons of sheet per year. He is frank to admit that he is a little dubious about the possibility of establishing such a small operation but is seeking engineering advice and equipment. He states that he expects to consult engineers in San Francisco early in November.

Exclusive "burn-out" cuts cost of furnace-lining maintenance

This drawing furnace, built by the Flinn & Dreffein Engineering Co., is lined with Armstrong's A-20 Insulating Fire Brick, backed up by A-16. During four years of continuous wartime production, this furnace lining required no maintenance.

YOU can keep furnaces on the job longer, without shutdowns for repairs, when they're lined with Armstrong's Insulating Fire Brick. That's because these brick have unusual durability, the result of their exclusive cork "burn-out."

Small air cells in insulating brick are formed by including fine particles of combustible material in the mix. These particles burn out when the brick is fired. Armstrong alone uses cork for this purpose. Cork doesn't absorb moisture and is relatively inert, so the mix can include a high proportion of the most durable clay without loss of plasticity. Thus cork "burn-out" results in brick of great strength and high resistance to spalling in addition to high insulating efficiency, light weight, low heat storage, and uniform texture.

All five types of Armstrong's Insulating Brick—for temperatures from 1600° F. to 2600° F.—possess a remarkable balance of desirable properties. You can check them against any other refractory insulation with "Specifications for Insulating Fire Brick," which lists A. S. T. M. standard tests. It's free. Just write to Armstrong Cork Company, Industrial Insulation Dept., 4910 Mulberry Street, Lancaster, Penna.

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Armstrong's A-20
Armstrong's A-23
Armstrong's A-25
Armstrong's A-25

ARMSTRONG'S INSULATING REFRACTORIES

PERSONALS

• **James E. Brown** has been appointed assistant to vice-president - supervisory personnel, American Steel & Wire Co., Cleveland. **Paul C. Harrison** has been named works superintendent, Newburgh wire works, Cleveland, to succeed Mr. Brown. Mr. Brown has worked for American Steel & Wire since 1930 and has been works superintendent since 1945. Mr. Harrison started to work for the Wire company at Newburgh works in 1936. Since 1946 he has been general foreman of the cold finished bar department.

• **J. P. Gangwisch,** who has been president of the Pittsburgh Tube Co., Pittsburgh, since its incorporation in 1924, has resigned that office because of ill health and is succeeded by **R. W. Hannan,** executive vice-president, who has also been identified with the company in an official capacity since its incorporation.

• **J. B. Rearick,** chief industrial engineer, National Bronze & Aluminum Foundry Co., Cleveland, has been promoted to comptroller, filling a vacancy created by the resignation of **C. H. Swallow.**

• **Edwin A. Murray** and **Howard Boteler** have been appointed assistant managers of the compressor division of the Worthington Pump & Machinery Corp. in Buffalo. Mr. Murray, who has been with the company since 1935, will have charge of industrial and government business and Mr. Boteler, with Worthington since 1923, will have charge of oil refinery and chemical compressor business.

• **Paul E. TenHoopen** has been appointed sales manager of the Realock fence department of the Wickwire Spencer Steel Div. of Colorado Fuel & Iron Corp. in Buffalo. **James A. Old** has been appointed sales manager of the hardware products department of Wickwire Spencer with headquarters in New York.

• **Paul W. Pheneger** has been appointed superintendent of finishing, packaging, shipping, and traffic for the Carnegie, Pa., plant of Superior Steel Corp. Mr. Pheneger was formerly general superintendent of Michigan Seamless Tube Co.

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• **C. W. Bliss** has been appointed controller and **Helen Heinmiller,** assistant secretary, of Warner & Swasey Co., Cleveland. Mr. Bliss joined the company in 1942, following his association with the Glidden Co. and Taylor Chair Co., which he served as treasurer. Miss Heinmiller has served the Warner & Swasey Co. in various clerical and secretarial capacities.

STEWART J. CORT, vice-president in charge of steel division operations, Bethlehem Steel Co., effective Nov. 1.

• **Quincy Bent** will retire as vice-president in charge of steel division operations, Bethlehem Steel Co., Bethlehem, on Nov. 1, being succeeded by **Stewart J. Cort,** general manager of the company's Sparrows Point, Md. plant. Mr. Bent will continue as vice-president in an advisory and consulting capacity, and as a director of Bethlehem Steel Corp. until Dec. 31. He was made vice-president in charge of operations in 1918. Mr. Cort, who succeeds Mr. Bent, was appointed superintendent of the Saucon Openhearth Div. of the Bethlehem plant of Bethlehem Steel Co. in 1917, and in 1922 was made superintendent of the entire Saucon Div. In 1928 he was made general manager of the Sparrows Point plant.

• **R. B. Scott** has been appointed general accountant, U. S. Steel Corp. of Delaware, Pittsburgh. Mr. Scott succeeds **S. P. Smail,** who has been elected comptroller and a director of the American Bridge Co. to succeed **F. D. Colburn,** resigned. Mr. Scott joined the staff of the comptroller, U. S. Steel Corp. of Delaware, in 1943. Mr. Smail, prior to his becoming general accountant of the U. S. Steel Corp. of Delaware in 1942, held various accounting positions with the Pennsylvania Rubber Co., Talon, Inc., the McKay Co. and the National Tube Co.

• **Harold R. Ryan** has been appointed assistant superintendent of openhearth department, Youngstown Sheet & Tube Co., at Indiana Harbor, Ind. Mr. Ryan joined Youngstown Sheet & Tube in 1937. He served as observer foreman of openhearth and bloomer at the company's Brier Hill works in Youngstown and also held jobs as first helper, practice engineer, junior and senior melter and turn foreman.

• **Raymond W. Harris** has been appointed manager of sales of Dumas Steel Corp., Pittsburgh, an affiliate of M. G. Dumas & Sons. Mr. Harris was formerly in the tin mill products sales division of Jones & Laughlin Steel Corp.

• **V. E. Lysaght** has assumed direction of the sales of Andrew C. Campbell Div. of American Chain & Cable Co., Inc., Bridgeport, Conn., succeeding **R. J. Southwell,** resigned. For several years, Mr. Lysaght has been in charge of engineering and sales of "Rockwell" and "Tukon" hardness testers, manufactured by Wilson Mechanical Instrument Co., an associate company of American Chain & Cable Co., Inc. He will continue his duties with Wilson Mechanical Instrument Co.

• **H. A. Grove** has joined the Atlantic Steel Co., Atlanta, as metallurgical engineer. He comes to Atlantic from Republic Steel, which he joined in 1933 as a member of the research department. Since 1936 he has been mill metallurgist on alloy flat products, specializing on stainless steel sheet and strip production.

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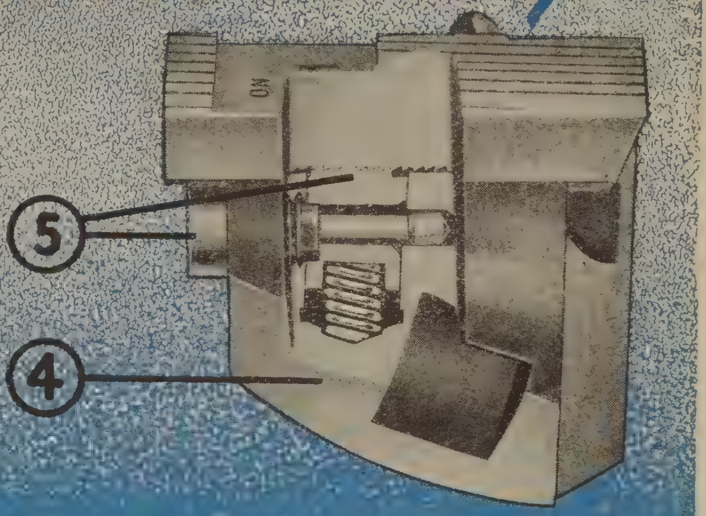
Ground Thread

TANGENT CHASER DIE HEADS



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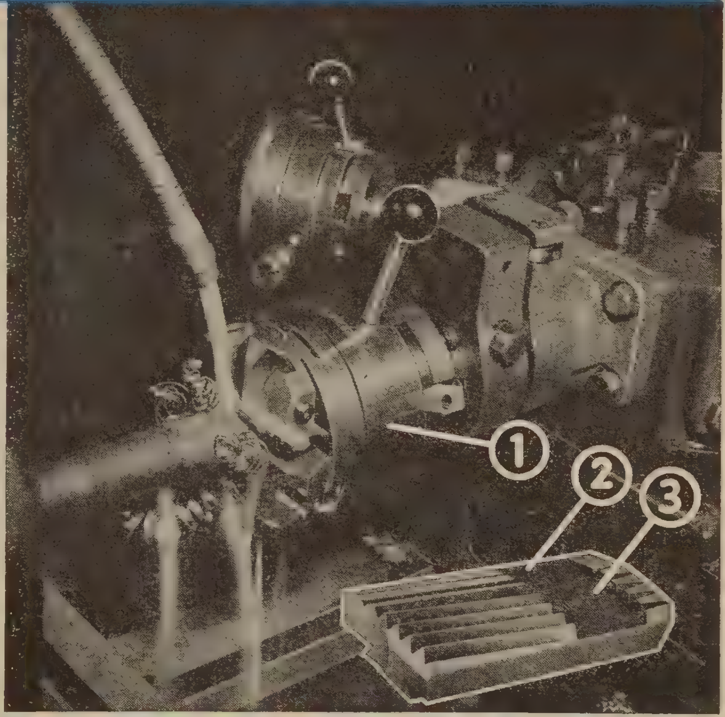

THREAD QUALITY

1. The Die Heads are hardened and ground throughout. The body is not only ground, it is lapped on the face and in the dovetail slots. The bearing surfaces of the chaser holders are also ground and lapped into the body.

2. Jones & Lamson Ground Thread Tangent Chasers are guaranteed to produce threads to Class III specifications.

3. *The exact helix angle, in fact all the elements of an accurate thread are ground into the chasers after hardening.* The possibility of poor quality threads and costly scrap, due to faulty chaser setting, is eliminated.

ECONOMY

4. *Jones & Lamson Tangent Chaser Die Heads are universal. Only one set of chaser holders is required for all right-hand threads, and only one set of holders is required for all left-hand threads within the rated capacity of the die head, regardless of pitch or diameter.* Investment in chaser holders is reduced to a minimum. Change over and set up is speeded.

5. Chasers are easily and quickly set. Ratchet-teeth on the back of the chasers, corresponding to ratchet-teeth in the holders, provide definite locating points for resharpening, measuring and setting. The chasers are positively and quickly secured. A couple of turns of a single screw releases or secures them in the holders.

If you are interested in greater economy and better quality in threading, fill in the coupon and we will send you our valuable handbook "Thread Elements and Formulas", together with complete information about our Die Heads.

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Please send me your handbook "Thread Elements & Formulas", and complete information about your Threading Dies.

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1A

HOWARD N. MAYNARD, president and treasurer, Snyder Tool & Engineering Co.

• **Howard N. Maynard** has been elected president and treasurer of Snyder Tool & Engineering Co., Detroit. He joined Snyder 12 years ago and has served the firm successively as secretary, secretary-treasurer, vice-president-treasurer-director, and now president. **Kenneth B. Hollidge** becomes vice-president, secretary and a director of the firm. He joined the company 4 years ago as personnel director and later became secretary. **Clarence Snyder,** retiring president, becomes chairman of the board.

• **Dr. James J. Pyle** has been elected to the board of directors of the Locke Insulator Corp., Baltimore. Dr. Pyle is director of General Electric Co.'s plastics division laboratory in Pittsfield, Mass.

• **E. C. Schaaf,** manager of the Atlanta office of Wheeling Corrugating Co., Wheeling, W. Va., has retired because of ill health, and **W. C. Gemperline** has been appointed as his successor. Mr. Gemperline moves to Atlanta from Columbus, Ohio, where he has served as a salesman.

• **Charles W. Gerster** has been appointed general manager of the Louthan Mfg. Co., East Liverpool, Ohio. He has been employed with Louthan in various capacities since 1930.

• **William D. McIntyre** has been elected to the post of executive vice-president and treasurer of the Monroe Auto Equipment Co., Monroe, Mich. This was incorrectly reported in last week's issue.

• **Frederick H. Foglesong** has been appointed to the staff of the Detroit district sales office of the Babcock & Wilcox Tube Co. Prior to this connection with the B&W Tube Co., Mr. Foglesong was with the Steel & Tube Div. of the Timken Roller Bearing Co. in their Detroit office.

• **Henry J. Held,** manager of the Rundle Mfg. Co.'s Camden, N. J., plant, has been elected president of the firm to succeed **E. F. Dobson,** who resigned to become president of the Florence Stove Co.

• **Harry E. Sweet** has been appointed factory manager of Aircraft Screw Products Co., Inc., of Long Island City, N. Y., succeeding **Eugene Lang,** resigned. Mr. Sweet was formerly assistant factory manager of Aircooled Motors Corp. and factory manager of Kellett Aircraft Corp.

• **R. E. Crockett** has been appointed consulting engineer on mining and beneficiation for the Lone Star Steel Co. of Daingerfield, Tex. Before recently entering private practice as a general consultant, Mr. Crockett was in charge of similar work for H. A. Brassert & Co.

• **Frederick K. Krell** has been appointed Chicago district sales representative of the Globe Steel Tubes Co. He has been with Globe Steel Tube since 1942, serving in the capacity of sales service supervisor.

• **E. R. Hinton** has been named president of the Olympic Steel Works of Seattle, to succeed the late **C. W. Kucher.** Mr. Hinton started with the company 30 years ago and previous to his promotion was vice-president and general manager. **Ronald E. Kucher** has been named vice-president of the same company and president of the Olympic Foundry Co., also of Seattle, succeeding his father, who held that post since the company's founding.

WILLIAM RODDER, vice-president in charge of engineering, Aetna-Standard Engineering Co.

• **William Rodder** has been elected vice-president in charge of engineering of the Aetna-Standard Engineering Co., Youngstown. Mr. Rodder has been in Aetna-Standard's engineering department for 18 years, and has been chief engineer for the past 9 years.

• **G. E. Mehleck,** sales representative and field engineer for the southeastern territory of Osborn Mfg. Co., Cleveland, has been transferred to the company's Chicago district office. **Ralph H. Martin** succeeds Mr. Mehleck as southeastern sales representative. Mr. Martin recently served in the U. S. Navy.

• **Paul R. Hermann** has been appointed manager of the Chicago branch of E. C. Atkins & Co. Mr. Hermann started working for Atkins in 1926. For several years he handled city sales and in 1936 was transferred to the Pittsburgh territory, remaining in charge there until his new appointment.

• **L. H. Chenoweth** has been named general manager of a new division, the plastic materials sales division, of the B. F. Goodrich Co., Akron, Ohio. Mr. Chenoweth joined the organization in 1914. He has headed the company's plastic materials sales since 1943.

when floor-to-floor time is measured in hours or days

make the part from SPEED CASE or SPEED TREAT Time Saver Steel

Holliday *Speed Case* and *Speed Treat* Steel Plates offer four big advantages . . . whenever parts must be machined from solid metal or large built up sections.

1. TIME SAVING—in job after job *Speed Case* and *Speed Treat* have consistently provided savings in machining time of from 25% to 40%.
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For all the facts on Holliday *Speed Case* and *Speed Treat*, ask for your nearest representative to call.

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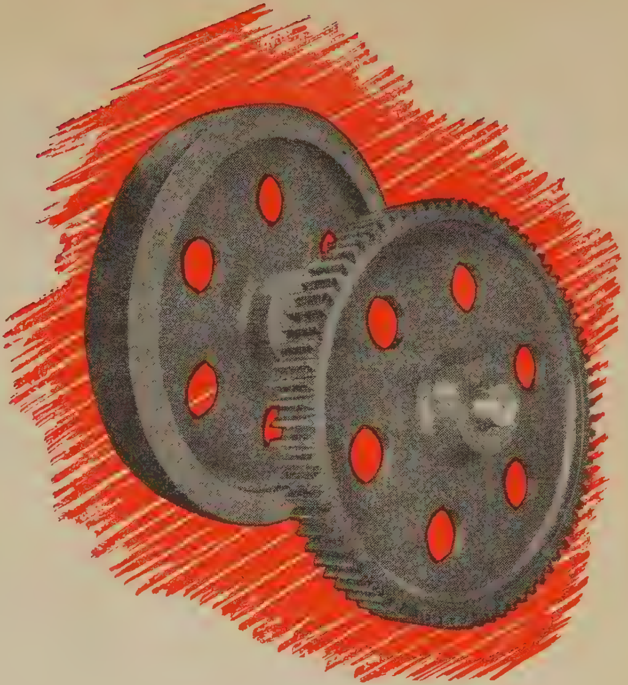
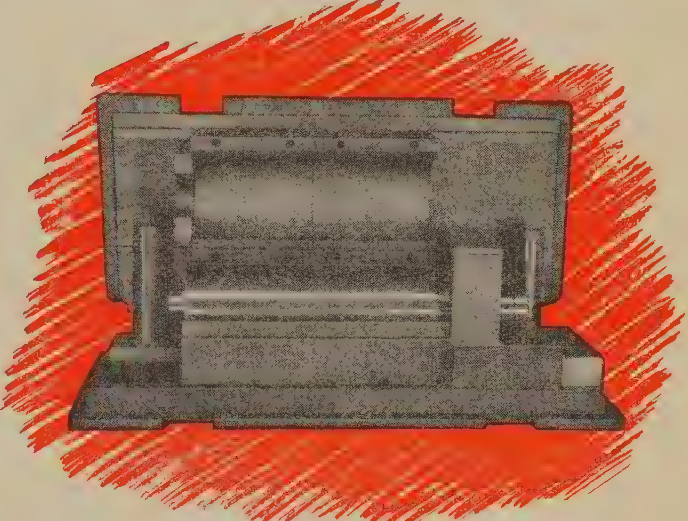


DRIVE GEAR for billet shear . . . made from *Speed Treat* plate. The web was flame cut from $1\frac{3}{4}''$ plate and welded to the 53″ diameter ring, flame cut from 7″ plate. Fabricated gear blank and machined gear with flame hardened teeth are shown above.



PUNCH and DIE for forming 8″ diameter Furnace Pipe. Use of *Speed Case* and *Speed Treat* steel in making this die-set resulted in an estimated overall cost saving of 23%. The die-set was designed and produced by the Beach Specialty Company, St. Clair Shores, Michigan.

SPEED CASE
LOW CARBON
AND
SPEED TREAT
MEDIUM CARBON OPEN HEARTH FREE MACHINING
STEEL
PLATES

Available in all common plate sizes from these distributors:

AKRON 1, Ohio
The Burger Iron Company
BUFFALO 5, New York
Beals, McCarthy and Rogers
BOSTON 10, Massachusetts
Brown-Wales Company
DETROIT 7, Michigan
Peninsular Steel Co.
HOUSTON 1, Texas
Earle M. Jorgensen Co.
LOS ANGELES 54, California
Earle M. Jorgensen Co.
MEMPHIS 2, Tennessee
Pidgeon-Thomas Iron Co.
NEWARK 5, New Jersey
Grammer, Dempsey & Hudson
OAKLAND 7, California
Earle M. Jorgensen Co.
PHILADELPHIA 34, Penna.
Horace T. Potts Co.
CANADA: Toronto 2, Ontario, Peckover's, Ltd.

• **Benson Ford,** a member of the board of directors of Ford Motor Co., will now devote his efforts and interests to the Lincoln-Mercury Div., Detroit.

• **Harry W. Holt** has joined Hupp Corp., Detroit, as general sales manager. Mr. Holt came to Detroit as one of the organizers of Bohn Aluminum & Brass Corp. and until 1938 was connected with that company in an executive capacity. Subsequently he was vice-president of Wilson Foundry & Machine Co., at Pontiac, Mich., resigning recently from that position.

• **James E. Mossell** has been appointed to the position of sales manager of the machine tool division, Buffalo Forge Co., Buffalo. Mr. Mossell has been associated with Buffalo Forge Co. for 35 years, more than 25 of which have been in machine tool sales.

• **Price M. Davis, Jr.,** vice-president and assistant general manager of Shadbolt & Boyd Co., Milwaukee, and treasurer of the subsidiary Northern Hardware & Supply Co., Menominee, Mich., has resigned after being with the firm 2 years.

• **Merle J. MacQuarrie** has been named regional manager of the Fruehauf Trailer Co., with headquarters in Buffalo. He was Buffalo branch manager for the last 16 years.

• **Joseph A. Galazzi** has been appointed chief engineer of the Liquid Carbonic Corp.'s Morrison, Ill., plant. Before joining Liquid, Mr. Galazzi served as plant manager of the constant temperature division of the American Instrument Co.

• **John W. Igoe** has joined the headquarters staff of Bituminous Coal Research, Inc., Pittsburgh, to handle technical information service and edit the *Bituminous Coal Research* bulletin. He succeeds **Carl S. Westerberg,** resigned, who has rejoined Utah Fuel Co., Salt Lake City, as technical assistant to president. Mr. Igoe resigned from Reuter & Bragdon, Inc., to join the BCR staff after handling production of technical publications for 18 months.

J. P. JOHNSON, president, Romec Pump Co.

• **J. P. Johnson** has assumed the presidency of the Romec Pump Co. of Elyria, Ohio. Mr. Johnson had formerly been vice-president and director of the Aro Equipment Corp.

• **Johan C. H. Larsen** has been appointed factory representative covering Northern Ohio for the Adalet Mfg. Co., Cleveland. Mr. Larsen was formerly with the W. Bingham Co. and the Fisher Body Div. of General Motors Corp.

• **Alexander E. Chalfin** has been appointed sales manager in charge of directing sales of new and used machine tools of the United Machinery & Tool Corp., Worcester, Mass.

• **Edward B. Kohl** has been transferred to the Corpus Christi, Tex. office of the Brown Instrument Co., Philadelphia, division of Minneapolis-Honeywell Regulator Co. He was previously with the Houston branch office of the company. **I. K. Farley** has been transferred from the Philadelphia branch office to Houston. **John D. Root,** formerly instructor at the Brown School of Instrumentation, has been made sales engineer at Philadelphia. **E. Curt Richards** has been transferred from the company's general sales department to the New York sales engineering staff. **Thomas Pitts** has been appointed industrial sales engineer at the Charlotte branch office. The following men have been added to the branch office field service engineering staffs: **William E. Brittain,** Philadelphia; **Edward J. Chance,** New York; **Ethron B. Deebel,** Philadelphia; **Gerald R. Dryden,** Syracuse; **John W. Forbes,** Albany; **Carl R. Haug,** Philadelphia; **Willard A. Holm,** New York; **Roger F. Lederer,** Chicago; **Albert J. Leonaitis,** Hartford, Conn.; **Elgin H. Lochte,** Houston; **John E. Luttrell,** Buffalo; **Kenneth Shapleigh,** Boston; **Clayton K. Taylor,** Indianapolis; **Robert H. Walker,** Cleveland, and **Frank M. West,** Boston.

• **William R. Hoyt,** general manager of the Stamford Div. of the Yale & Towne Mfg. Co., Stamford, Conn., has been appointed assistant to the vice-president in charge of production. **Mark A. Miller,** assistant general manager of the Stamford Div., has been appointed general manager of the new specialty division in Virginia. **J. Bryan Williams, Jr.,** special assistant to the general manager, succeeds Mr. Hoyt as general manager of the Stamford Div. **Hugh J. Mathews,** assistant secretary of the company, has been transferred from the executive offices in New York to the Stamford Div., where he will supervise all accounting and office procedure as well as continue his duties as an officer of the company.

• **Don P. Caverly,** director of the lighting center of Sylvania Electric Products Inc., New York, has been named manager of the expanded commercial engineering department, succeeding **Harris Reinhardt,** who has been appointed assistant to the director of industrial relations. Mr. Caverly will continue to direct activities of the lighting center and **J. C. Kromhout,** architectural engineer, has been named supervisor. **Jan Reynolds,** also a member of the lighting center staff, has been appointed home lighting consultant. **Charles I. Brady, Jr.,** formerly division lighting engineer in New York, has been named supervisor on lamp division products, and **Robert R. Wylie,** previously commercial engineer at the Danvers, Mass., plant, has been appointed supervisor on fixture division products.

• **Hollis C. Doss,** formerly Kansas City sales manager for the appliance division of Enterprise Wholesale Inc., has been made manager of the kitchen sales division for Hotpoint, Inc., and **Frank L. Sacha,** formerly executive representative for the company in Washington, has been named manager of Hotpoint's newly-created water heater division. Both men will headquarter in Chicago.

• **John H. Thomas** has been named to succeed **George E. Gregory** as vice-president and purchasing director of Owens-Corning Fiberglas Corp., Toledo, and **Ben S. Wright** becomes Owens-Corning's general sales manager. Mr. Gregory has resigned from Owens-Corning to become president of the Morton-Gregory Co., Inc. Mr. Thomas has been Owens-Corning's vice-president in charge of sales since 1946. He has been with the firm since it was organized in 1938, and prior to that time was identified with the Owens-Illinois research activities. Mr. Wright joined Owens-Corning in 1940 and was assigned to the general office sales organization as manager of the Fiberglas yarns division. In 1945 he became manager of the Fiberglas branch sales office in Cleveland. He returned to the firm's general offices in Toledo last month.

• **Arnold H. Smith,** acting managing director of Monsanto (Australia) Pty. Ltd., has been elected vice-president and a member of the board of directors of Monsanto (Canada) Ltd., and will assume his duties Jan. 1, 1948. **Irving C. Smith,** vice-president and member of the board of directors of Monsanto (Canada) Ltd., has resigned effective Jan. 1 to accept promotion to assistant general manager of Monsanto Chemical Co.'s western division, with headquarters at Seattle.

• **Neil C. Reed** has been appointed eastern district manager of the Westinghouse Electric Corp.'s elevator division, Pittsburgh. He succeeds **Robert H. Wagner,** who has become Pacific Coast district manager of the division, with headquarters in San Francisco.

• **Claude F. Harris** has been appointed western manager, industrial sales, the Sherwin-Williams Co., with headquarters in Chicago. He succeeds **Lyman V. Weber,** who held the post for a number of years but who has been unable to continue because of ill health. Mr. Harris joined the Sherwin-Williams Co. in 1938 to handle national accounts. Later he was made industrial sales representative for the Wisconsin area, the position he held prior to his present appointment.

• **Addison E. Wiles,** assistant manufacturing manager of the General Electric Co.'s plastics division, has been appointed manager of the Pittsfield, Mass., molded products works. Mr. Wiles succeeds **Arthur C. Treece,** who has been named assistant manager of the new GE plastics laminating plant at Coshocton, Ohio. **C. H. Linder** has been named assistant manager of manufacturing for the General Electric Co.'s apparatus department, Schenectady. Mr. Linder has been assistant manager of the Schenectady works since 1943.

• **Charles F. Ericksen** has been named personnel manager for Chicago factory and offices of General Electric X-Ray Corp. **Eliott Oakes** has been appointed manager of the newly-created wage and salary rate section which operates both in the Chicago and Milwaukee plants. Mr. Ericksen was formerly head of the scheduling section of production control, and Mr. Oakes formerly was in charge of job evaluation for the personnel department.

• **Carmen F. Newland** has been appointed manager of the Kansas City district of the industrial products sales division of the B. F. Goodrich Co., Akron, Ohio. Mr. Newland has been with the company 20 years.

...OBITUARY...

• **Abraham Ungerleider,** president and treasurer of the American Compressed Steel Corp., Louisville, died Oct. 8.

• **Cecil W. Machon,** general sales manager of the Brown & Sharpe Mfg. Co., Providence, died recently. He entered the employ of the Brown & Sharpe Mfg. Co. in 1898. He had also been president of the Brown & Sharpe Co. and Brown & Sharpe of New York, Inc., subsidiaries of the parent concern.

• **William T. Shaler,** 73, consulting engineer with the Ajax Flexible Coupling Co. Inc., Westfield, N. Y., since 1935, died Sept. 25.

• **Dudley G. Rowell,** 89, head of the Rowell Mfg. Co., Appleton, Wis., died recently after a short illness.

• **John E. Sharp,** 72, president of Aluminum Seal Co., New Kensington, Pa., died suddenly on Oct. 11. Mr. Sharp's career with Aluminum Seal began in 1915. He was made vice-president and general manager in 1930, and was elected president in 1935.

• **A. G. Bussmann** of the Wickwire Spencer Steel Div. of the Colorado Fuel & Iron Corp., New York, died Oct. 7. He was associated with the Wickwire Spencer Steel Co since 1931. At the time of his death, he was in charge of sales of the Wickwire Div.

• **George A. Chadwick,** 66, vice-president and chief engineer of Vickers, Inc., Detroit, died recently.

• **John M. Stetter,** 80, superintendent of Bethlehem Pacific Coast Steel Corp.'s bolt and nut department at South San Francisco, died Oct. 2. He had been with Bethlehem since 1928.

• **Hubert F. Myhr,** 48, purchasing agent for the Parker Pen Co., Janesville, Wis., died Oct. 4.

• **William H. Phillips,** 60, vice-president in charge of sales of Molybdenum Corp. of America, Pittsburgh, died Oct. 10. He had served as president of the American Society for Metals at one time.

• **William T. Litchman,** 64, employment manager of the West Lynn, Mass., General Electric Co. plant and later at the Everett division of the company, died recently. He retired last year.

European Letter . . .

• Newly-formed International carries threat that Communists will intensify attacks on Europe's Socialist parties . . . Next conference to discuss problem of world peace and economic restoration as well as reorganization of a Socialist International.

LONDON—The announcement that the Communists have formed a new International to fight Western imperialism carries with it the threat that they will now intensify their attacks on those Socialist parties of Europe which are not subservient to them. The accusation is that these Socialists, in particular the French Socialist Party led by such "social fascists" as Messrs. Ramadier and Blum, or the Right Wing of the Italian Socialists led by Signor Saragat, are the agents of American capitalist domination and of its British junior partner and that it is owing to them alone that the unity of the working class in defense of real democracy has been destroyed.

It may even be that the new "Cominform" presages a return to the Communist Party's tactics after 1929, when the Communists all but abandoned their opposition to the Nazis—with whom on occasion they made common cause in 1932—in order to concentrate their energies on destroying the "social fascists"—in other words, the moderate Social Democrats.

The violence of Communist propaganda does not lessen the interest of the question whether in fact they have something to fear, whether Europe's Socialists are, in an organized and coherent fashion, pursuing a policy of support for America and Britain and using their position to "weaken and disrupt" the working class.

On the score of close association with America, Europe's Socialists can be immediately acquitted—indeed, a majority of Americans would probably like to make the scrapping of socialism a condition of American aid. But there may be more in the charge that European Socialists have closely associated with Britain. The Labor government represents, after all, the solidest achievement of moderate Social-Democracy and it would be only natural if some links had been formed with the European Socialists.

In fact, three conferences of European Socialists have already been held and another is in the offing. It is on the basis of these meetings that the Soviets base whatever is positive in their charge of anti-Soviet collusion among the Social Democrats of Europe.

A SECOND International does not exist—nor is one contemplated for the time being. What has occurred has been merely a series of conferences. The Socialist Parties of Europe and other continents last year accepted the proposal of the Labor Party to hold conferences every 6 months, the first two were held in Clacton and Bournemouth, the third last June in Zürich, and the next will meet in Antwerp early in December.

These conferences have confined themselves to the exchange of information and the election of new member parties. The only rules governing their work are that political decisions must be unanimous; that candidates for membership must receive the votes of two thirds of the existing parties, and that procedural decisions are reached by simple majority.

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Since the conference has no policy, there is no permanent executive committee. A consultative committee meets in London between conferences to supervise the work of a tiny Socialist information and liaison office and to prepare the agenda for the next conference; political questions are explicitly excluded from its competence, and its chairmanship rotates among all the parties.

The coming Antwerp conference includes in its 3-day agenda the whole problem of world peace and economic reconstruction, as well as the possible restoration of a Socialist International. But it would be unrealistic to expect that any common policy on these subjects will be framed. The time available is quite inadequate, and few of the delegates will be technically equipped for the type of study which any significant proposals would require. Moreover, most parties, including the Labor Party, would be unable to commit their governmental representatives.

THE Labor government in Britain is constitutionally unable to fit its policy to the decisions of an international party organization. The Labor Party will only allow itself to be represented abroad by members of its executive committee or by permanent party officials.

The most able members of the executive are inevitably, at present, Ministers who, for diplomatic reasons, may not travel abroad as party delegates. Thus the only members of the executive who are available for foreign conferences are trade unionists who are not members of the TUC General Council, some of the women members, and Professor Laski, who has consequently become for Soviet propaganda the evil genius of European Socialism.

The existing limitations on the scope of the international Socialist Conferences have created dissatisfaction among more doctrinaire elements in the French and Belgian parties as well as among minority or émigré parties which hope to draw strength from membership of a formal Socialist International.

But it is also clear that these parties would be content with the organization of an international debating society, in which verbal victories could be gloriously won and magnanimously forgone by the construction of equivocal formulas for unanimity.

The formation of the Cominform is likely to strengthen this doctrinaire approach, but the experience of power and responsibility has turned most of the European parties firmly away from the attempt to cure a compound fracture by spells and incantations.

The majority know that contact must be more flexible and informal than it was under the old Second International. No centralized organization can attempt by more or less public discussion to unify or coordinate the policy of parties working in every variety of circumstance. And even if such difficulties could be overcome, the basis for such an organization does not exist among the European Socialist parties.

There is no unquestioning deference to a single state party—the deference which kept all Communist groups subservient to Russia in the Comintern. The doctrines, methods, traditions, experience and environments of the various parties are widely diverse; their unity is partly a verbal coincidence.

THIS diversity can of course be overstressed. On the whole the European Socialists have beliefs in common which they do not all share with other parties in their own countries; they combine a faith in economic planning for social justice with a faith in the dignity of the individual and his right to an area of freedom from state control. Above all, they have today certain common problems, common dangers, and common interests.

Many of them are embarrassed in holding the balance of power between extreme parties whose policies are irreconcilable without Socialist mediation. All of them dread the necessity of choosing finally between an American or Soviet bloc, or between junior partnership in a "Bourgeois" or in a Communist-controlled government. The moment of choice on either issue—which may indeed have arrived—is all too likely to split the various parties, and to destroy a popular appeal which is based on the denial that such a choice is necessary.

For this reason, the parties have in the past realized that their own survival depends primarily on the survival of Labor Britain as an independent world power. It is this fact, and not any international organization, which has explained the potential solidarity of the Socialist parties in Europe behind British policy.

The tragic dilemma forced on the genuinely independent Socialist groups in Poland and Czechoslovakia by the Communist decision to set up a Cominform lies precisely in the compulsion on them to choose between East and West, whereas they have hitherto sought to keep a foot in both camps.

This point meets the Soviets' second charge—that Britain has sought to weaken the working class in Europe. On the contrary, the main interest of the Labor Party is that a foreign Socialist party should retain its organic independence, and extend its effective political influence through an increasing membership and efficient organization; it is only in the survival of the party as a legal entity that the possibility of a future initiative under more favorable circumstances can be preserved.

THE limitations imposed on an independent British foreign policy by the economic crisis and the world situation have taught the Labor Party to sympathize with, for example, the Socialist parties of Eastern Europe in their present difficulties. In fact the position of Britain in world politics and the position of many Continental Socialist parties in internal politics are identical in form.

So the Labor Party, whatever Soviet propaganda may say, has consistently tried to discourage disunity in foreign parties and has, where splits have occurred, ignored the dissidents and remained in relations with the majority party, even when very critical of its policy.

In fact, when the facts are examined coolly, it becomes obvious that it is the Communists, not the European Socialists, who have taken the decisive step in destroying the last vestiges of "working-class unity."

Europe is still full of men of the Left who would regard a permanent division of the Continent as the last disaster and have sought by "common fronts," by "united action," and by every expedient at their disposal, to bridge the growing gulf. But now Moscow has put them on the spot.

The only unity permissible is unity imposed by the Communists and aimed directly against the West. The bridges must be broken and European Socialism must accept "brotherhood"—Soviet version—even if the process involves knocking in every Socialist head from Warsaw to Penzance.

"BOYAU D'ACIER"

STEELING HOME: *At the Paris Fair held this summer many of the industrial products and inventions shown were designed to circumvent current shortages. This spring-steel bicycle tire was designed to relieve the rubber shortage.*

Industrial News Summary...

- ***Steelmaking Costs Mounting***
- ***Scrap Makes New High Record***
- ***Tinplate Prices to Advance***

STABILIZED steelmaking costs have been knocked into a cocked hat this week. Steelmakers are now entering one of the most serious squeeze plays in their history. Rising freight costs and one of the strongest scrap markets since records have been kept are rapidly eliminating any safety margin to profits which may have been obtained through the steel price increase of a few months ago.

If raw materials for steelmaking and freight rates continue to advance, no steel company can continue to sell steel at current prices. Steelmakers must face this problem before many months are out even though they have full knowledge that steel is a basic commodity, the price of which determines quotations on hundreds of other items. Already there are reports that the price of tinplate, which must be named before Jan. 1, 1948, may go up $15 to $25 a ton. Subsequent market factors between now and the latter part of December, will determine the new price for tinplate—but a stiff advance is inevitable.

Scrap prices this week not only surpassed the hectic period of June, 1917, but topped the previous all-time record made in the early part of August this year. Substantial increases in the price of No. 1 heavy melting steel were registered this week in Chicago, Philadelphia, Pittsburgh, Cleveland, Youngstown, Boston and St. Louis. There was no indication at mid-week that the peak had been reached. Already brokers were having difficulty covering at published quotations.

Heavy melting steel this week was up $3 a ton at Chicago and $2 a ton at Pittsburgh and Philadelphia. The tonnage of scrap moving from the east to the midwest was on the increase. Consequently, many Pittsburgh consumers were already paying higher prices for distant shipments than they were offering for local material.

THE IRON AGE scrap composite price this week reaches an all-time high of $41.83 per gross ton, up 16¢ a ton from the previous high made in August of this year. The increase in the composite this week is $2.33 a ton greater than a week ago. More significant is the $12.33 advance since the year's low was reached in the week of May 5. In June 1917 THE IRON AGE scrap composite price reached $37.21 per gross ton.

Just as serious from a cost standpoint is the increased freight absorption by steel companies shipping finished steel into the Detroit area. Because of the arbitrary delivered price which places all companies on a competitive basis when delivering in Detroit, Pittsburgh producers are now being forced to absorb as much as $4.70 a ton. It is expected that the Detroit delivered price because of the recent freight advance may be boosted at least $1 a ton.

With a great number of steel consumers having had their fourth quarter quotas of flat-rolled products almost entirely wiped out, demand for steel is reaching almost hysterical proportions this week. Greater activity is present in the gray market with little chance that premium price levels there will decline for months to come. Conversion deals, whereby customers buy ingots and have them converted into finished steel, are progressing at such a hectic pace that even they are being held back because of their volume.

Some steel companies are turning down additional tonnages of ingots for conversion because of the filled-up condition of slabbing mills which break the ingots down into slabs. This situation has tightened up the supply of free slabs, the spot price on which is in many cases more than $90 a gross ton compared with a published price by large companies of $45 a ton. Strangely enough some major steel producers on firm contracts are now selling ingots in the immediate vicinity of their plants at about $5 a ton below the price of scrap. In the case of billets, blooms and slabs these same companies on contracts with customers close by their plants are receiving only about $3 to $4 a ton more than they are paying for scrap.

The pig iron situation this week is reaching an all-time record for tightness, so short is pig iron that some steel companies are being forced to divert this metal from their openhearth in order to supply pig iron to ingot mold makers. If the latter were not to receive this material a shortage of ingot molds would further restrict current steel output which is now at a postwar high.

STEEL production this week is unchanged at 97 pct of rate capacity. It is possible that steelmakers may be able to boost output at least a ½ point or a point more. It is hardly likely that the industry this year can reach the 100 pct mark.

Even though steel companies were in a position to rapidly expand their steel capacity they would come up smack against a coke shortage. The immediate outlook for coke supplies is not good. New mines and equipment, however, will eventually remove this raw material bottleneck. Steelmakers are further hampered by the quality of coke. Until this situation can be cleared maximum production from coke tonnage will be retarded to some extent.

Because of steel cutbacks, holiday influences and other raw material problems it is probable that automobile production for the final quarter of this year will be at least 5 pct behind the total for the third quarter. Many auto makers are running into difficulties which will keep assemblies below the 100,000 car per month setup.

According to reports from Detroit one of the large steel sources there has been studying the possibilities of using high tensile low alloy steel permanently in automobiles. This firm has come to the conclusion that only a few parts will require such steel when there is a return to free competition and adequate supply of carbon steel. Other large firms, however, have not indicated their position on this matter.

• **IRON ORE**—Consumption of Lake Superior district iron ore by U. S. and Canadian blast furnaces in September totaled 26,491,937 gross tons, raising cumulative consumption this year to date to 59,516,825 gross tons compared with 46,820,885 tons for the same period of 1946. September consumption was slightly less than August when 6,637,835 gross tons were consumed, but somewhat greater than the September 1946 consumption of 6,380,155 gross tons, according to the monthly report of the Lake Superior Iron Ore Assn. As of Oct. 1, iron ore stocks at furnaces and Lake Erie docks totaled 36,961,634, compared with 33,896,462 a month ago and 37,572,950 tons on Oct. 1, 1947. Active blast furnaces depending principally on Lake Superior district iron ore numbered 172 in the U. S. and nine in Canada. Idle furnaces numbered 11 U. S. and one Canadian.

• **FACTORY PAY**—According to the Bureau of Labor Statistics factory workers received 107.4 pct more pay in August 1947 when the weekly wage averaged $49.29 compared with $23.77 for August 1939. Considering the change in the purchasing power of the dollar and higher tax rates, Bureau of Labor Statistics officials claim that a worker with no dependents had 15.3 pct more purchasing power than in 1939. A worker with three dependents is said to have 30.2 pct more purchasing power now than in 1939.

• **HIGH BID OF $3,255,000** by Missouri-Illinois Furnaces, Inc., and Hanna Coal & Ore Corp., has been accepted by WAA for two surplus blast furnaces and a by-product coke oven at Granite City, Ill. The plant has a rated capacity of 465,000 tons of pig iron annually. The award is subject to Justice Dept. approval.

• **BUILDING COSTS**—Industrial building costs advanced two points to 163 during the third quarter, according to the Austin Co.'s index of industrial building costs (1926 equals 100). This advance, following 6 months of relative price stability, reflects further increases in the prices of construction materials and equipment, shortages in glass, roof insulation, and all products fabricated from steel sheet, plates and pipe, plus the effects of localized strikes which have disrupted delivery schedules on steel, tile, and certain other products.

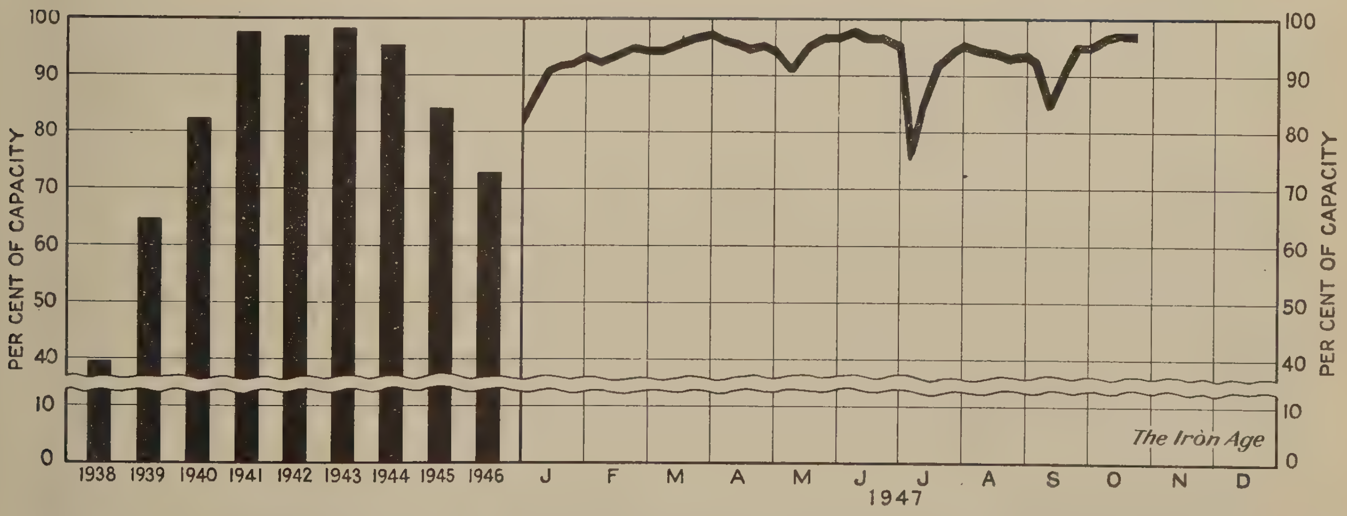
• **ELECTRIC DEMAND**—When the war ended industrial electricity users' demand was 74 pct above the 1939 figure. Farm users were up to 3.5 million at the end of 1946, an increase of 700,000 in the past 2 years. Westinghouse Electric gives this data to help explain why it is now turning out steam turbine generating equipment at a rate nearly double that of any previous year. It plans to continue this rate at least through 1950, by which time the nation's generating capacity will be 20 million kw, 40 pct above the prewar potential.

• **DURABLE GOODS**—August retail sales of durable goods, aggregating somewhat more than $2 billion, stood at about 16 pct above last year, according to Commerce Dept. reports. Building material and hardware groups recorded 17 pct gains over last year although showing little change over the past four months. Automotive sales, which have failed to show any change since May, were 22 pct above last year.

• **MACHINERY PRICES**—Prices of general and auxiliary machinery and equipment have risen 2.3 pct since January, according to the Bureau of Labor Statistics July report. Heat exchangers and water and air coolers showed greatest rise, 9.3 pct; prices of industrial heat treating furnaces as well as cutting tools and machine tool attachments showed little change, each rising less than 1 pct.

• **LIGHT LOAD-HEAVY SHORTAGE**—Railroad performance back in 1944 was highly lauded as exceptional by all civilian and military leaders. Actually, so far this year the roads have done an even better job of hauling freight minus the back slapping congratulations. Carloadings through September this year exceed the similar period in the peak war year by 360,525 cars. Serviceable cars during the same period show that the higher number of loadings this year was handled with 26,360 fewer cars than the roads had available in 1944. The revenue tons carried in 1944 were greater than 1947 by 99,115,670 net tons. This practice of lighter loading in cars since the war's end is attributed by many as one of the hidden reasons for the present freight car shortage.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
October 14......	106.5*	95.5	92.0	92.0	98.0	102.0	100.5	99.0	98.0*	108.0	106.0	80.0	94.0	97.0
October 21......	106.0	95.5	90.0	92.0	93.5	102.0	101.0	98.0	99.0	104.5	96.0	74.0	94.0	97.0

* Revised.

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At a time when America must make fullest use of its steel-producing capacities and conserve its natural resources, the trend to N-A-X HIGH-TENSILE has national significance. Each ton produced represents a potential 33% increase in finished goods. Each ton used enables the manufacturer to get 33% greater usefulness out of his steel supply.

Investigate the opportunity to make each ton of sheet steel go farther—through the superior quality of N-A-X HIGH-TENSILE.

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Scarcity of Furnace Coke Called Similar to Steel "Shortage"

Immediate Outlook Is Spotty; New Mines and Equipment Assure Future Supply

° ° °

By GEORGE F. SULLIVAN
Pittsburgh Regional Editor

° ° °

Pittsburgh

• • • **The coke shortage** is like the steel "shortage." Coke is being produced in record breaking tonnages for a peacetime year yet some blast furnace operations are threatened by short supplies. To give the problem an added fillup, coke quality is considerably poorer than it was before the war. But while the short term outlook is discouraging in spots the long term picture is not as bad as it is often painted.

Steel mill executives queried by THE IRON AGE generally indicated that coke was one of their major worries in current expansion plans. In addition, several of them have publicly said so. Ernest T. Weir, board chairman of National Steel Corp., declared recently that his company was having difficulty buying high grade coal for coke making and that because of the present high operating rate coke quality was poor. Admiral Ben Moreell, president of Jones & Laughlin Steel Corp., said here last week that one of the causes of the present steel shortage was the quality and quantity of steelmaking scrap and the quality of coal available for steelmaking purposes.

U. S. Steel Corp. alone has plans for expanding its byproduct coke capacity by 1.9 million tons. With other programs in the industry total byproduct coke expansion is estimated by reliable sources to be in the neighborhood of 5 million tons. Oven expansion is not, of course, the sole answer.

Dr. A. R. Powell, associate director of research, Koppers Co., Inc., Pittsburgh, breaks the coke supply story down into two phases. The immediate or short term shortage is due to bottlenecks such as are harassing many industries today, he believes. He feels that the longer term problem hinges on the quality of coking coals.

Mining engineers say that the tremendous increase in mechanical mining during the war outstripped washing, or beneficiation, equipment. It is believed in the industry that as more washing equipment is installed it will be possible to maintain quality by removing surplus sulfur, ash and other impurities from the coal.

As pointed out by Charles C. Russell of the Koppers research department, Kearny, N. J., studies of our coal reserves indicate that there are "still very ample supplies of coking coal, but that the thick seams are being more rapidly depleted than the thinner seams. In addition the quality of the reserves is getting poorer, for the 'good' coals are being more rapidly depleted. The latter may be in spite of the mechanical mining that has caused an increase in the ash and sulfur of the coal."*

What will be the result to the steelmaker—and thus to the steel consumer—of this picture? The steel producer—or the coke producer—is finding it essential to invest in considerable mechanical mining and washing equipment to process coal that can be economically hauled to the blast furnace. And while mechanization cuts labor costs, washing and blending cost money. So, no one who knows the situation will predict anything but higher coke costs. Furthermore, it is well known that most of the cream of the good economically located coking coals has been taken off.

This leaves the operator two choices: He can mine mechanically, blend and wash and still get a reasonable freight cost. Or he can mine elsewhere. It is generally believed that there are other seams of good quality coal, but they are so located that it would be exceedingly expensive either because they are too deep or because they are not economically located for transportation.

It is uncertain how much of the increased cost of coke, if any, will have to be passed on to the steel consumer. It is well known that the amount of coke in the blast furnace burden has been sharply reduced in recent years. High cost coke will, it is believed,

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* *Before regional meeting of American Coke & Chemical Institute, Rye, N. Y., Apr. 29, 1947.*

To Our Readers

New York

• • • This is about the only way we can tell you readers that we appreciate your cooperation and patience in answering our past questionnaires. We tried to make them as painless as possible yet furnish information for objective surveys.

It seems the busier you have been the greater interest you have shown in answering our post card opinion studies. That is good. It helped us to get your views on current questions.

It is not always the real facts that count in trying to get reactions to this or that. If enough people believe a thing it is that belief which controls your actions many times.

When the results of these surveys were published they did not always please some segments of our readers. That is as it should be. It proves that you readers feel strongly about this or that.

We know this because on one survey we received more than a 50 pct return and on another one we received replies from 43 pct of those who were queried. That is far above the average survey return and is another reason why we thank you for your help and cooperation. We will continue to send out queries in as painless and objective manner as possible.

The Editors

give ironmakers added incentive to investigate ways of further reducing the proportion of coke required. At the moment, technical men say that a few of the most promising angles on this is use of oxygen and high top pressure in the furnace and beneficiated burden.

Among the immediate measures which steel producers here are taking to maintain iron production is purchase of beehive coke from mines in the Connellsville, Pa., area. This is a poor quality product from ovens which many believed would not even be operating at this time. Nevertheless some ovens have actually been rebuilt there despite the fact that the seams on which they are located have been worked out and coal must be trucked to them from other mines.

Another cause of the short term shortage is of course the freight car scarcity which has forced curtailment of operations at a number of mines. Some believe that exports of metallurgical quality coal are partly responsible. This is a debatable subject upon which accurate figures are unobtainable. Mining men say that with domestic demand as it is they would have little reason to export coking coal—despite the price—because of fear of protests from their regular customers. It is known, too, that Dutch interests were recently protesting in Pittsburgh about the poor quality of coal they are receiving.

Tackling the long term problem, the following steel companies have embarked on new mines or improvements in this area: U. S. Steel Corp., Republic Steel Corp., Jones & Laughlin Steel Corp., National Steel Corp., and Sharon Steel Corp. Jones & Laughlin will spend millions on new tipple and washing facilities; Republic has leased 3000 acres of coal with one producing and three abandoned mines; the National Steel expansion includes two new mines but Mr. Weir has observed that it will be several years before they are producing.

All of which adds up to a picture that promises no substantial improvement within the next year. The future depends on the time it takes and the extent to which more coal can be made available.

Civil Suits Against Corp. Board Members Now Being Prepared

Washington

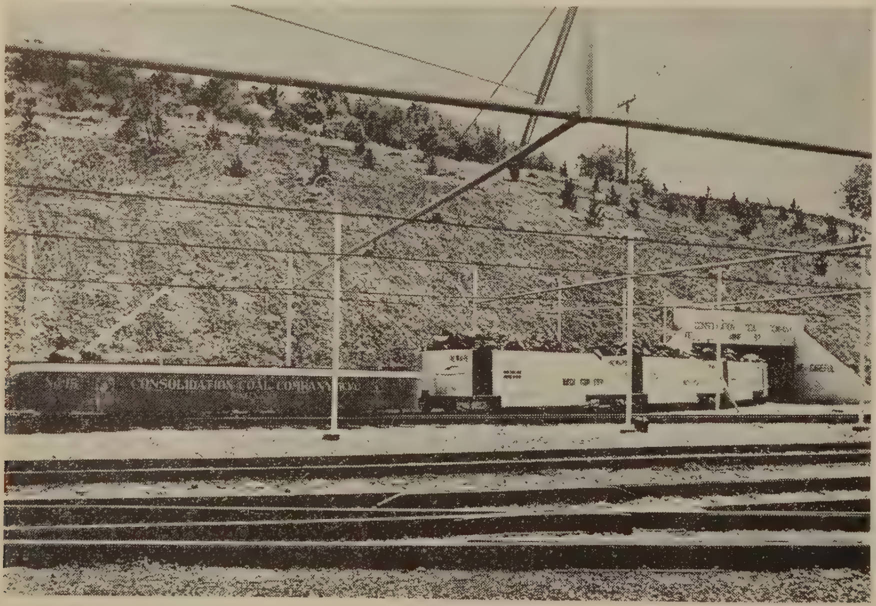
• • • **Justice Dept. attorneys** are preparing civil suits against some members of corporation boards who serve on the boards of competing firms.

Attorney General Clark discloses that his department has examined since May 1 the directorships held by some 10,000 persons in 1600 leading industrial corporations as part of a campaign to secure compliance with Section 8 of the Clayton Act.

"A large number of corporations have on their boards men who are also representative of their competitors," according to Assistant Attorney General John F. Sonnett. "While a number of these directors have resigned, a few have disagreed with our view of the law and have decided to await court proceedings. Accordingly, the government will in the near future file civil suits against such directors."

Section 8 of the Clayton Act makes unlawful the holding of directorships by the same person in two or more competing corporations if one of the companies has capital, surplus and undivided profits of more than $1 million. Of the 10,000 directorships examined, some 1500 were held by men who also held directorships in more than one company. Of these 1500, about 60 persons were found to be holding directorships in two or more competing concerns, Mr. Clark said. Twenty directors have resigned or agreed to resign from boards of 14 corporations since the start of the survey.

MIXED BLESSING: *Mechanization was called upon during the war to increase coal mine output substantially. It did so, but quality of material brought above ground declined and will not again approach normal until extensive washing facilities can be installed in most of the nation's mechanized mines.*



PEI Elects New Officers

Cleveland

• • • **During the sixteenth** annual meeting of the Porcelain Enamel Institute, held here Oct. 9, the following officers were elected for the coming year: President, C. D. Clawson, Ferro Enamel Corp., Cleveland; vice-presidents, Herbert R. Spencer, Erie Enameling Co., Erie, Pa.; Edward L. Seasholtz, J. M. Seasholtz & Sons Co., Reading, Pa.; R. J. Ritchey, Carnegie-Illinois Steel Corp., Pittsburgh; J. T. Penton, California Metal Enameling Co., Los Angeles; J. H. E. McMillan, Ingram-Richardson Mfg. Co., Beaver Falls, Pa.; treasurer, P. B. McBride, Porcelain Metals Corp., Louisville; secretary, Edward Mackasek, Porcelain Enamel Institute, Washington.

CIO Convention Attack on Prices Asks Return of Controls

Boston

• • • **An attack on** prices and profits rather than last year's emphasis on "substantial" wage increases will feature CIO strategy in the coming year. This theme, coupled with plans for a well organized war on the Taft-Hartley Act and its supporters, dominated discussion at the 1947 convention of the Congress of Industrial Organizations. The meeting held here last week also revealed that the Steelworkers union will not make use of the National Labor Relations Board.

The CIO will support foreign relief and back President Truman's food conservation campaign. It will not affiliate with the American Federation of Labor on the latter's terms and has called for immediate convening of Congress to enact price control and rationing. Philip Murray, who was reelected to the presidency he has held since 1940, emphasized these points to the 600 delegates from all CIO unions. He also had some caustic words for business men who practiced "organized extortion." The Congress, he said, should take steps to place such individuals behind penitentiary bars.

Mr. Murray told a press conference following the final session that this had been the CIO's most successful convention. Experienced labor reporters observed that it had probably received more complete press coverage than any other labor convention. It also marked, according to Mr. Murray, the first time a Secretary of State had ever addressed such a convention.

It will be recalled that the CIO's 1946 convention went on record in favor of "substantial" wage increases. Mr. Murray told the press that while such a program had not been emphasized on the floor, it did not mean some unions might not seek wage increases next year. Wage increases were mentioned just once in a resolution on the cost of living—which resolution also included a blast at the steel industry for its "arrogant refusal to expand capacity."

Murray Asks Congress Session To Set Prices, Rationing; Won't Sign Red Oath

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The Steelworkers will not use the services of the National Labor Relations Board. Mr. Murray, president of USWA, is unwilling to file an affidavit that he is not a communist. It is, he said, a matter of principle. Since Philip Murray is obviously not a communist his action produced a roar of approval and a demonstration that rocked the convention hall.

Said he: "It is reasonable to assume that if a man is required to file an affidavit of this description, the Congress that enacts legislation of that kind can readily enact a law which says to a labor leader, 'What are you? A Catholic, Protestant or Jew?' It might ask that same question of the business interests of this country . . . who have varying degrees of political belief. . . . The Congress had in mind a diabolical piece of work . . . revolting to a citizen who believes in decency and in justice and in freedom."

The 73-page report of Philip Murray to the delegates devoted considerable attention to prices and corporate profits. It quoted Dept. of Commerce figures to show that profits for all corporations after taxes will be almost $17.5 billion for this year. Profits, it asserted, had set an all time peak when they hit $12.5 billion in 1946. This was compared with the previous peak of $10 billion in 1943. Agreeing that price increases had boosted dollar profits, it asserted that "not even business sources would presume to claim that all of the increase in corporate profits is due to dollar inflation."

This was followed in the report by an attack on "monopoly control" and price fixing in industry and a warning that less and less money is going into savings.

The Taft-Hartley Act was of course roundly criticized by most speakers. The CIO, said Mr. Murray, will greatly increase its political action efforts to bring out the vote and to raise funds to defeat supporters of the act. He believes the act will cause some difficulties in collective bargaining where unscrupulous employers will use it to hinder the growth of the CIO, if not to undermine its strength.

He invited employers to meet with unions in a spirit of good faith and to work out their difficulties through collective bargaining. "I invite employers," said Mr. Murray, "to take advantage of this open and frank gesture I am making. I believe we can work out our problems on a mutually satisfactory basis without Federal interference."

In the concluding session and at a press conference Philip Murray outlined his stand on merger with the AFL. Alluding to the invitation of Mr. Green ("my ancient friend") to take the CIO into the AFL ranks, Mr. Murray said that his union would thereby become a "sacrificial goat." They want us to come in first and settle jurisdictional problems later, he explained. But he pointed out that John L. Lewis was now "sitting by the side of the road and lamenting his lot in life." The reference was to Mr. Lewis' catch-all union, District 50, now the center of the sort of jurisdictional battle Mr. Murray chooses to avoid.

Reelect Officers For Steel Scrap Institute

Baltimore

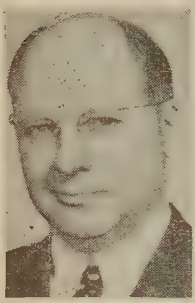
• • • **At its meeting in** Baltimore on Oct. 14, the Seaboard chapter of the Institute of Scrap Iron & Steel, Inc., reelected the following officers: President, Harry Kerstein, Maryland Pipe & Metals Co., Hagerstown, Md.; vice-president, Joseph Shapiro, Cambridge Iron & Metal Co., Baltimore; secretary-treasurer, Nathan Brenner, Joseph Brenner & Son, Baltimore.

The following were chosen as members of the executive committee: Samuel Silbey, Sherrard Nott, Julius Peck, Marcus Smith, O. Lee Ford, Samuel Lazinsky.

Cautions Buyers To Purchase Only What Inventories Merit

Milwaukee

• • • Warning that "we are in more of a price boom than a production boom," George L. Meyer, Jr., vice-president of Stewart-Warner Corp., cautioned members attending the district conference of the National Assn. of Purchasing Agents to watch their inventories and buy cautiously.


G. L. MEYER, JR.

"My advice is to buy what you need — for delivery when you need it. Don't overbuy and don't hoard," Mr. Meyer, a former vice-president of the association, said. The continuing increase in food prices with resultant general price and wage increases, but without increased production, is an unhealthy condition, he pointed out.

While anticipating a decline in prices and stating "the healthiest condition which could occur would be an exceedingly heavy crop in 1948 and lower prices," Mr. Meyer expressed doubt there would be a recession in 1948.

The current slackening of consumer demand, in spite of higher incomes, could become extremely serious were it not for a number of cushions which should make it possible for business to absorb a price break and continue operations in a better balanced economy, he said.

"The coming price breaks—when they come—will widen the market to include more of the two-thirds of American families in the lower income groups which have many unfulfilled demands for goods," he said.

Continuing aid to Europe and government stockpiling of critical materials will tend to prevent surpluses and a subsequent price decline, however, Meyer stated.

"While it is true that business activity in general has receded from its March 1947 peak, reaching a low in July, it picked up considerably during August and preliminary figures for September indicate still further improvement," he said. "This applies to both durable and nondurable goods, generally."

Chapple Says Corp. Will Push Its Huge Expansion Program

Atlantic City, N. J.

• • • U. S. Steel's half billion dollar modernization and expansion program includes study of the possibilities of increasing scrap and coal supplies and improving steel mill technology. The corporation, said Bennett S. Chapple, Jr., assistant vice-president, U. S. Steel Corp. of Delaware, will leave no stone unturned to raise production to the highest possible levels consistent with sound business practices. Mr. Chapple made these statements in a talk before the recent convention here of the National Assn. of Sheet Metal Distributors and the National Wholesale Hardware Assn.

Mr. Chapple pointed out that the steel industry has been attempting since the end of the war to perform simultaneously two separate tasks — first, replenishment of the inventories which are needed to safeguard the production lines of industry, and second, the production day by day of the steel needed to keep those production lines operating. He also noted that if production had not been limited by work stoppages and raw material shortages during the past 2 years, the steel industry would have produced an additional 17 million tons of finished steel products.

Discussing the current program of subsidiaries of U. S. Steel, involving $500 million for new and additional facilities, he said that this program will make available the following increases in product capacity: 1.9 million tons of byproduct coke; 1 million tons of pig iron; 300,000 tons of increased ingot capacity; 925,000 tons of sheets; 500,000 tons of tin plate; 300,000 tons of tubular products, and 80,000 tons of wire products.

Noting that completion of many of these projects cannot be accomplished in less than 3 years, Mr. Chapple said that U. S. Steel is diligently exploring three potential ways of bringing all facilities into full production without delay: "They involve scrap, coal and steel mill technology," he said.

"It is hoped that the government's promised speedup of the cataloging of surplus property will help to make available shortly additional tonnages of scrap, an important basic commodity in steelmaking. We are lending our best efforts to improving the coking quality of coal as well as the availability of additional amounts of coal to the steel industry. You are probably aware of the recent experiments with the use of oxygen to supplement open-hearth operations. This is merely one of the many technological advances being worked on today, which in time, it is hoped, will contribute to increased steel production."

Two Navy Scientists Get Salaries Over Former $10,000 Top

Washington

• • • **Two Navy scientists** — Dr. Ralph D. Bennett and Dr. Louis T. E. Thompson—are the first Civil Service employees to receive salaries in excess of the former $10,000 ceiling.

Salaries of not less than $10,000 and not more than $15,000 for 45 Army and Navy scientific positions were authorized by Congress on Aug. 1. The extra salaries are authorized for the services of "specially qualified scientific professional personnel."

Dr. Bennett, 47, is technical director of the Naval Ordnance Laboratory at White Oak, Md. Following studies at the University of Chicago and the Massachusetts Institute of Technology, he engaged in cosmic ray research and specialized in mine developments during the war. His other interests include depth charges, impact fuzes, influence explorers and pyrotechnics.

Dr. Thompson, 56, now technical director of the Naval Ordnance Test Station at Inyokern, Calif., formerly was in charge of research for the Lukas-Harold Corp., of Indianapolis. A graduate of Kalamazoo College and Clark University, he is presently directing studies of rockets, guided missiles and aviation ordnance.

Brass Order Volume Recovers After Serious Summer Decline

New Mill Firm Price Policy May Be Cause of Order Slump During Week

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By JOHN ANTHONY
Eastern Regional Editor

° ° °

Waterbury, Conn.

• • • **Brass mill order** volume has recovered from its serious summer decline, as indicated by September shipments and indications of reasonably high order volume in October. However, mills are concerned about the drop in orders during the past week which some factors attribute to the resistance of buyers to the newly instituted mill firm price policy for 60 days, coupled with the belief that this must indicate coming weakness in the price of copper.

Although recent mill order volume is estimated at 175 pct of the prewar average in the years from 1935 to 1939, it is not yet at a volume commensurate with wartime expanded plant capacity. However, there is optimism in the industry about the prospects for improvement in order volume because summer business fell well below the Federal Reserve Board Index for Machinery Manufacture which is always followed very closely by brass mill shipments.

Brass mills that have placed into effect the firm price policy expect no early decline in the copper price and point to the low tonnage of copper above ground in this country, 80,000 tons, less than a single month's deliveries. Normal domestic inventories range from 200,000 to 300,000 tons. In addition, production costs have increased appreciably with higher wage and freight rates and the relative exhaustion of the richer deposits of some western mines. Moreover, Chilean copper is no longer cheap, as the government takes as taxation 50 pct of the price difference between 10¢ per lb copper and the current market price. This tax is about to be increased by 20 pct, despite the opposition of the Chilean Finance Minister, and the measure has already been passed by one of Chile's two legislative bodies.

Other factors, not dependent on the use of refinery shapes such as cakes or wire bars, foresee some probability of the development of a price spread between primary copper, expected to hold at its present price, and refinery copper. It is expected that mills in a position to use refinery copper may soon be in a postion to buy below the prevailing market because of the large volume of scrap on hand at refineries and more available to them from dealers. It is reported, however, that some mill salesmen are telling customers that a copper price decline may soon be expected.

There is considerable disparity in the cost of copper production by major domestic producers. Kennecott and Phelps-Dodge open pit mining operations are even more economical than previously due to today's labor rates. However, under normal conditions it is the practice for brass mill price leadership to be taken by American Brass Co., fabricating subsidiary of Anaconda, a high cost domestic producer. As in the steel industry, price leadership today has been temporarily assumed by other mill producers.

Profit margins in the brass mill industry are very small. It is estimated that only 3¢ of the sales dollar remains as profit after taxes. Capital investment in the industry is high. It is estimated that it requires an investment of $½ million to produce $1 million gross revenue, which results in $100,000 net profit after taxes. Cost of mill operations is constantly rising. The state of Connecticut has recently instituted a sales and use tax of 3 pct which serves to build up the cost of machinery. In addition it has raised the corporation tax from 2 pct to 3 pct. Obsolescence of equipment comes in cycles much more frequent than the government tax allowance for depreciation and obsolescence.

With this background, the encroachment of other metals into the normal markets for brass mill products is viewed with alarm by the industry. Today's high prices for brass mill products have permitted aluminum, and even stainless steel to gain a major foothold in a number of brass mill markets. Aluminum tubing, rod and wire has become a major threat to brass

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REPLACING STEEL: *Kaiser-Frazer's Willow Run plant is now tooling up for production on an aluminum gasoline tank that will eliminate 22 lb of steel per car. The new gas tank, resting lightly in the arms of a Kaiser-Frazer secretary, weigh only 7 lb. Weight of the blond is not given.*

° ° °

mill volume. Stainless steel tubing and specialties such as sink strainer baskets are a lesser threat, but unexpected because of current high stainless steel prices. This competition has already made itself felt in the industry as the order volume or brass rod is way down, especially in the larger diameters.

The break even point for brass mills prewar was about 65 pct of capacity. Postwar high costs and wage rates brought this figure up to an estimated 75 pct until the summer decline in orders when layoffs at the mills of the order of 20 pct resulted in lowering the break even point. An improvement in the productivity of labor was observed coincident with the layoffs. In general, although no large numbers of workers have been rehired, production proceeds at higher than summer levels. The industry figures capacity operations on a three shift basis. The third shift is generally only manned sufficiently to balance out the deficiencies in the production schedules.

In prewar normal times, the industry was able to depend at times of declining order volume on the reduction in price of copper, zinc and other metal supplies, as well as a reduction in labor costs. Now, however, metals are expected to continue on a firm price basis and the roughly 20 pct of mill cost represented by labor is the only variable factor to meet declining markets. Some observers consider that the summer decline was advantageous because it permitted the industry to readjust its operations at a period when markets generally were at a high level. Industry members estimate that current wage levels average $1.35 to $1.40 per hr, although some mills pay as high as $1.49 per hr.

The industry is still in process of reorganizing its acquired warplant facilities to roll the thinner gages involved in peacetime requirements. It is expected that the major units will be in full operation by the year end. Hot mill capacity is well over the requirements of normal business. Hot mill operation was ideally suited to production of cartridge brass. In adapting the operation of these mills to peacetime requirements, an estimated 20 pct increase in metal cost is involved in the segregation of scrap and refining needed to eliminate lead as an impurity.

Brass mill shipments during 1947 until the end of August were at an average daily rate of slightly over 6 million lb. Daily shipments in July were 3,966,000; in August, 4,532,200 lb. Total shipments to the end of August were 1.48 billion lb, made up as follows: Copper, 492,787,200 lb; nickel silver, 29,543,500; phosphor bronze, 17,308,000; other products 940,485,300. Total 1946 shipments were 2,153,396,100 lb. Total brass mill shipments in pounds are as follows:

January	233,956,400
February	213,611,500
March	214,393,800
April	207,935,500
May	181,085,100
June	165,698,600
July	122,946,100
August	140,497,000

Annual Tool and Die Convention to Talk On Special Tooling

Philadelphia

• • • **The National Tool & Die** Manufacturers Assn. consisting of over 450 executives from the country's leading contract shops concerned with the production of special tooling for new products, will hold its annual convention at the Benjamin Franklin Hotel, Philadelphia, starting on Sunday, Nov. 2, and extending through Wednesday, Nov. 5. Contract tool and die shop owners and production executives from 21 tool centers of the association will be represented at the sessions.

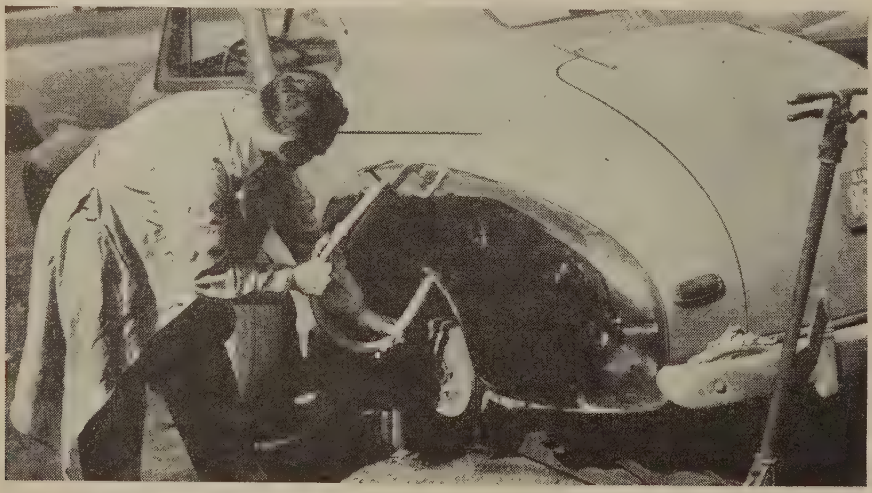
One of the highlights of the meetings will be a luncheon address on Monday by Marshall M. Smith, president of the E. W. Bliss Co. of Detroit, the country's largest manufacturer of stamping presses and builders of rolling mills and can making machinery. Mr. Smith returned from Europe recently and he will discuss the outlook for industrial recovery abroad, combining an appraisal of the future of pressed metals.

Another feature of the Monday sessions will be an address on "What the Taft-Hartley Act Means to You" by Eugene B. Schwartz, a leading Cleveland attorney. A presentation of "Realistic Methods of Estimating by Tool and Die Manufacturers" is also on the Monday agenda.

On Tuesday, William F. Patterson, director of the U. S. Apprentice Training Service, Washington, will discuss the training of toolmakers, and George Elliott, of Elliott-Jemison & Co., will talk on practical accounting for tool shops.

Another feature of the Tuesday sessions will be a panel discussion by customers and shop owners, entitled "Getting Best Results in Tooling." This discussion evoked considerable interest at last year's convention in Chicago. Burnham Finney, editor of *American Machinist,* will be the moderator.

FOR THE WOMEN: *John J. Nemeth works on a damaged fender with a new fender repairing device which rolls out dents instead of hammering. Manufacturers of the device claim that it is able to renew a fender in as little as 12 min.*



Supreme Court Hears Arguments on Cement Basing Point System

Washington

• • • **The Supreme Court** this week concluded its hearings of government and industry arguments on legality of the multiple basing point system on the strong contention of industry attorneys that the basing point system employed in the cement trade is "not illegal *per se* under the Clayton Act . . . the Federal Trade Commission Act or any other law."

Furthermore, the cement industry told the court during two days of argument by FTC and the industry, Congress has shown itself to be unwilling to declare the basing point system illegal, "notwithstanding repeated urgings by the commission."

As the cement case goes so will the celebrated case of the multiple steel basing point argument. The objectives and details are so similar that if the FTC loses the cement case it is unlikely that they will get anywhere with the steel basing point argument.

The FTC knew this when they instituted the latest blast against the steel companies. However, based on actual experience it might be years and years before the Supreme Court would rule on the steel case. In 1924 the FTC instituted a Pittsburgh Plus case against the United States Steel Corp. This case is still in the courts 24 years later. There is no reason, say high government officials, to believe that the case started a few months ago will be settled any more quickly. The cement ruling, if it goes against the FTC, will not deter the latter from their steel fight but it will in the minds of most observers pull all their teeth and take the wind out of their sails.

Argument for the high court to uphold a circuit court judgment in favor of the industry was presented primarily by William J. Donovan and Nathan L. Miller. Mr. Donovan cited the lower court decision which stated:

"We know of no criticism so often and so forcibly directed at courts, particularly federal courts, as their propensity for usurping the functions of Congress. If this pricing system which Congress has over the years steadfastly refused to declare illegal, although vigorously urged to do so, is now to be outlawed by the courts, it will mark a high tide in judicial usurpation."

Mr. Donovan charged that FTC presented "unsupported assumptions" that delivered prices are computed in such a fashion that at any given point sellers' prices are identical. Comparison of the cement industry case with the 1940 Socony-Vacuum price-fixing case is meaningless, he stated, since the argument "has no foundation in the facts in this record."

FTC, Mr. Donovan said in a respondents brief, "did not find or prove the conspiracy charged." He said the commission avoided "any clear indication as to when the supposed combination began" and asserted:

(1) FTC made no finding of the conspiracy charged.

(2) FTC's findings are based upon incompetent evidence in substantial respects.

(3) Nationwide conspiracy as charged is not shown in the findings and proof as to the organization and activities of the Cement Institute.

(4) Nationwide conspiracy as charged is not shown in the findings and proof insofar as they show any concurrent use of a multiple basing point system of pricing.

(5) Findings and proof as to the uniformity of delivered prices are not supported by evidence.

(6) Argument that the multiple basing point system is illegal *per se* has never been acknowledged by Congress.

(7) Nationwide conspiracy as charged is not shown in the findings based on the testimony of FTC's economic experts.

FTC's "thesis of conspiracy" rests upon the identical theories that "have been thrice rejected by the Congress," Mr. Donovan stated. "We respectfully ask this court to reject them not because they are theories—but because they are contrary to law and the evidence in this record," he concluded.

Argument for the commission was presented by Walter B. Wooden, associate general counsel of the FTC, and Charles Weston, of the Soliictor General's office. Mr. Weston based his conclusion on the statement that "there can be no doubt as to the adequacy of the commission's findings on combination," and declared that the combination found by FTC "constitutes a restraint of commerce" in violation of the FTC act.

The lower court was in error, FTC said in its brief, in stating that it was urged to hold the basing point system illegal *per se* and to require that cement be sold on an f.o.b. plant basis. FTC said the basing point system as such was not attacked, what was attacked was agreement to maintain and implement the system and to eliminate price competition.

"We think that under the facts of this case an inference of agreement could reasonably be drawn from the existence of the system alone," FTC said.

No Rise in Mystic Price

Boston

• • • **The freight rate** advance has no bearing on Mystic's pig iron price. However, foundry carlot buyers will have to pay the added freight. The Mystic price is scheduled to remain unchanged until July and what action is taken then will be governed by the Buffalo delivered New England price.

At the moment Buffalo iron cuts very little figure in New England, and no foreign iron is offered. Textile machinery manufacturers' foundries are going strong. There has been a letdown in activities of some of the smaller melters, but they are taking in pig iron when available in the hope of building up a reserve.

Longhorn Tin Output Down

Washington

• • • **Domestic smelter** production of pig tin during September amounted to 2356 tons while imports totaled 5764 tons, the Commerce Dept. has disclosed. At the same time, the Department said it had allocated 4875 tons against this total of 8120. As of Sept. 30, Office of Metals Reserve stocks aggregated 16,356 tons.

Pittsburgh Mills Are Drilling for Gas on Their Own Properties

Hope to Alleviate Expected Fuel Shortage This Year; Firms Remain Mum

Pittsburgh

• • • **Wells drilled on** their own property are expected to provide several Pittsburgh plants with a standby source of natural gas during the coming winter. Because last winter's natural gas shortage raised so much havoc here, many plants immediately began installing alternate equipment. In fact, an IRON AGE survey shows a lot of standby oil equipment is already widely installed in the area and several companies have put in liquid gas storage facilities. Well drilling is the newest approach to the problem.

Pittsburgh Steel Co., Pittsburgh Plate Glass Co., and Westinghouse Electric Corp. are now drilling wells, and some other companies have started to drill or plan to do so but are unwilling to discuss their projects at this time. Officials of natural gas companies serving the area do not regard this activity as a threat to their business. On the contrary, all have told THE IRON AGE that they welcome any steps to relieve what promises to be a critical fuel supply problem in the months ahead.

Pittsburgh Steel Co., which has long used its own gas wells to supplement its supply from the utilities, is drilling a new well near its Allenport plant and has a rig set up to start another one in that area. The company plans to sink a third well but its location has not been disclosed. For Pittsburgh Steel there is not the drilling gamble some other companies must take because its crews are drilling in an area already spotted by producing wells.

For the past 47 years Pittsburgh Plate Glass Co. has supplemented the purchase of natural gas with supplies from its own gas producing wells located in four western Pennsylvania counties. Several additional wells are now being sunk to increase the gas supply during the winter months for large glass producing plants located at Ford City and Creighton, Pa.

Westinghouse is drilling on the grounds of its East Pittsburgh works near the copper mill. Gas furnaces in that mill take a big bite of the plant's 40 million cu ft monthly gas demand. W. C. Rowland, manager of the Westinghouse factory service division, explained that gas is no stranger in the Turtle Creek Valley, where the firm's largest plant is located. Between 1905 and 1915, he said, George Westinghouse had a dozen wells drilled in the valley, and some were good producers.

"Even half a million cu ft a month from this new well would make us happy," Mr. Rowland said. "What we need is a small emergency supply we could count on if our regular commercial supply is curtailed." At a cost of $3 a foot, with plans to go down 3900 ft if necessary, there is something of a gamble involved. "What if we don't strike gas?" countered Mr. Rowland. "A water supply at this location would come in handy for cooling purposes at the copper mill."

GOOD GAMBLE: *Hoping to hedge against the natural gas shortage next winter, Westinghouse Electric Corp. had this rig set up on the grounds of its East Pittsburgh works to go down as far as 3900 ft, if necessary, in a search for natural gas.*

The Westinghouse survey was begun last spring under the direction of geologist John T. Galey as a result of the crimp last winter's shortage put in the firm's operations.

Scaife Co., which uses gas for brazing, galvanizing and allied operations in the manufacture of pressure vessels, has a group of wells on its property which it has undertaken to improve.

Equitable Gas Co., Manufacturers Light & Heat Co., and Peoples Natural Gas Co. are the utilities supplying the majority of the Pittsburgh district's natural gas. They would of course like to see more steel for pipelines but until that happy day they are anxious for their customers to help themselves.

A spokesman for the Equitable company said they had gone so far as to aid one customer who had an old well which was giving out.

Charles E. Bennett, president of the Manufacturers company, said that: "If our industrial customers can help themselves out by drilling for gas on their own properties to furnish standby fuel we put that in the same category as any other standby equipment."

The Peoples Natural Gas Co., according to its president, E. M. Borger, feels that if any industrial consumer can find gas near his plant "we will be very happy for him to do so."

These comments show a cooperative attitude on the part of the gas companies which is actually borne out by facts. Not only have they given advice on existing wells, but some have also suggested likely places to drill.

Weekly Gallup Polls . . .

U. S. Public Approves Secretary Marshall's Methods

Princeton, N. J.

• • • **After 9 months** in office, Secretary of State George C. Marshall enjoys the support and goodwill of a substantial majority of his fellow citizens, according to George Gallup, director, American Institute of Public Opinion.

More than eight out of every ten polled by the institute compliment him on the job he is doing in handling the State Dept.'s toughest problem, relations with Russia. Only 2 pct, or one person in 50, say he is doing a poor job.

This striking degree of goodwill tops even that enjoyed by Cordell Hull when he was Secretary of State in the Roosevelt Administration.

From coast-to-coast a cross-section of voters was asked by interviewers for the institute:

"Do you think Secretary of State George Marshall has been doing a good or a poor job in handling our relations with Russia?"

The vote:

	Pct	
Good job	63	83
Fair job	20	
Poor job	2	
No opinion	15	

After Secretary Marshall took the reins at the State Dept. early this year a note of greater firmness or "toughness" appeared in our handling of Russia.

This was entirely consistent with the mood or temper of the American public, a mood which had changed from one of desiring to conciliate Russia to one less yielding.

At the time of the Marshall appointment the institute questioned American voters on what sort of policy they wanted to see the new Secretary adopt—a policy similar to that of his predecessor, James F. Byrnes; a firmer policy, or a softer one toward Russia.

The vote was:

	Pct
Marshall should follow Byrnes policy	19
Should be firmer	51
Should be softer	5
No opinion	25

President Truman and Secretary Marshall have been repeatedly accused of "imperialism" by Communists, who claim that the United States is out to dominate Europe.

Thus far that accusation has made little or no impression on the American people. Only a small minority think that the United States is insisting too much on having its own way in dealing with other nations.

▪

Survey Shows Disillusionment Over American Participation In World War II Is Growing

° ° °

• • • **The government and** responsible statesmen of both major parties might just as well face the fact of growing disillusionment about our participation in the recent world war.

We may be witnessing a trend similar to the growing disappointment in the 1920's and 1930's over the unfulfilled hopes that the world would be made safe for democracy. On those blasted hopes American isolationism was largely based, and by 1937 seven out of 10 voters believed the United States entry into the first world war had been a mistake.

A year ago only 15 pct of voters in a coast-to-coast survey held a similar view about our participation in World War II. Now, just 2 years after the end of that conflict, the institute finds a large increase in the number of voters with that opinion, even though the war was forced on us by the Japanese attack at Pearl Harbor.

In April 1946 and October 1947 this question was asked of representative voters throughout the country:

"Do you think it was a mistake for the United States to enter World War II?"

The results were:

	Mistake Pct	Not Mistake Pct	No Opin. Pct
April 1946	15	77	8
Today	24	66	10

For the moment, however, this trend has not noticeably affected the strong desire of the people for a successful United Nations. An intensive study of the public's attitudes toward UN reported by the institute last month showed that 85 pct of Americans favored the organization, and that a majority believe the UN should be strengthened to make it a world government.

Despite this apparent desire to have the government remain internationally-minded, it will be well to keep an eye on what might be called the "disillusionment quotient." If the number of people expressing disillusionment with American participation in the last war grows, a definite swing toward isolationism might develop.

A number of interesting observations can be made upon analysis of the present survey:

(1) The more education a voter has the less inclined he is to regret American participation in the last war.

(2) No difference is shown in the views of men and women and very little in those of various occupational groups.

(3) Surveys conducted by the institute before the war brought out clearly that the South was the most belligerent section—the section which showed the highest vote in favor of starting war against Hitler and the highest vote in favor of aiding England and France. Today, consistent with their prewar view, Southerners show the least regret over World War II of any section.

The main reasons given by voters approving American participation are: We had no other choice since we were attacked; we had to defend our country, and that we would probably have been dragged in ultimately anyhow.

Those who claim it was a mistake feel America got nothing out of the war and is no better off; that we should stay out of other countries' affairs, and that war is too expensive for our economy.

Expansion Program To Make Portsmouth Big Wire Producer

Portsmouth, Ohio

• • • **Portsmouth Steel Corp.,** once the poor relation of Wheeling Steel Corp., and an aging memento of the halcyon days of Ohio River steel, has regained its youth, apparently, in a $2,500,000 expansion program which will make it an important producer of wire products.

Now the property of Cyrus S. Eaton and associates, Portsmouth Steel Corp. has set its sights on the production of 2000 tons of ingots daily.

The new wire mill departments, where most of the money is being spent, include annealing, where two new Lee-Wilson furnaces have replaced two coal fired furnaces, doubling capacity; a modern straightline cleaning house; rod patenting, oil tempering; fine wire; two new galvanizing units; and a lawn fence department, and a battery of new fence machines for field farm fence.

According to Elmer A. Schwartz, Portsmouth president, production of wire products will reach 23,000 to 25,000 tons a month when the program is completed.

He said the rod and wire mill is already rounded out except for high speed wire drawing equipment, and 26 high speed wire drawing machines are on order. About 10 of these are due in 30 days and the balance next June.

"Portsmouth," said Mr. Schwartz, "is setting up to be truly competitive."

Merchant wire products at the present time are sold f.o.b. Portsmouth, but some products are sold on competitive basing points.

Portsmouth's plans to move into the high carbon specialty wire business are hampered to some extent by a shortage of iron. Present production of the plant's only blast furnace, "Old Susie," is somewhere in the vicinity of 800 tons a day. This furnace was last relined in 1943. Portsmouth's iron production, for 10 openhearth furnaces, means that the plant will be a high scrap consuming unit. Present scrap consumption is about 27,000 tons of purchased material a month. Historically, the plant used 60 pct scrap in the openhearth, a level the new operators would undoubtedly like to lower in light of present scrap prices.

Portsmouth bid on the Ironton furnace at Ironton, Utah, offered by War Assets Administration, to supplement pig iron production.

While any talk of increase in pig iron production at Portsmouth in the immediate future is highly speculative at this time, it is possible that consideration has been given also to sheet mill, which might come in about July 1, 1949, when the KF-Wheeling-Portsmouth arrangement expires, and the manufacture of springs within the Portsmouth plant.

In response to questioning, Mr Schwartz said the plant's engineering studies were not sufficiently complete at this time to decide which way "we will direct the total tonnage."

At present, Portsmouth is selling about 10,000 tons of powdered coke a month, and the plant's executives are anxious to broaden their coal holdings. Stock of Emperior Coal Co., which operates a coal mine in Kentucky, was acquired with the Portsmouth plant. Portsmouth purchases the entire output of this mine, estimated at 400,000 tons annually, which constitutes about 45 pct of the plant's estimated annual requirements.

In the original Portsmouth Steel Corp. prospectus, it was stated that the remaining recoverable coal in their mine will be removed in approximately 3 years at the present rate of operation, which gives the mine about 2 more years to go.

Present plans of Portsmouth entail the expenditure of about $2,500,000, most of which is being directed at the rod and wire mill. Portsmouth officials feel their rod mill is one of the best in the industry, and have spent $60,000 for two new coilers, which have helped increase production about 15 pct, and their intention is to make it one of the most modern in the country.

Coming Events

Oct. 30-Nov. 1 **American Society of Tool Engineers,** semiannual meeting, Boston.

Oct. 31 **Illinois Mining Institute,** annual meeting, Springfield, Ill.

Nov. 2-5 **National Tool and Die Manufacturers Assn.,** annual meeting, Philadelphia.

Nov. 6-7 **National Founders Assn.,** annual meeting, New York.

Nov. 6-7 **Society of Automotive Engineers,** fuels and lubricants meeting, Tulsa, Okla.

Nov. 7 **Openhearth Committee, AIME,** annual meeting, Pittsburgh.

Nov. 7-8 **Annual Conference on X-Ray and Electron Diffraction,** Mellon Institute of Industrial Research, Pittsburgh.

Dec. 1-3 **Society of Automotive Engineers,** air transport meeting, Kansas City.

Dec. 1-6 **Twenty-First Exposition of Chemical Industries,** New York.

Dec. 4-6 **Electric Furnace Steel Committee, AIME,** annual conference, Pittsburgh.

Jan. 12-16 **Society of Automotive Engineers,** annual meeting, Detroit.

Jan. 12-16 **National Materials Handling Exposition,** Cleveland.

Jan. 19-20 **Institute of Scrap Iron & Steel, Inc.,** annual convention, Chicago.

ISIS Elects Officers

Washington

• • • **At its meeting** in Jacksonville, Fla., on Oct. 12, the Southeastern chapter of the Institute of Scrap Iron & Steel, Inc., elected the following officers: President, Irving Levin, Superior Iron & Metal Co., Jacksonville; first vice-president, Louis B. Cline, Cline & Bernheim, Nashville, Tenn.; second vice-president, Max Kimerling & Sons, Birmingham; third vice-president, H. T. Herndon, J. T. Knight & Son, Inc., Atlanta, and secretary-treasurer, Herbert Luria III, Luria Bros. & Co., Inc., Birmingham.

The following were chosen as members of the executive committee: Moses A. Temerson, William Breman, Sol Walker, J. B. Chinn and David Koplin.

Freight Car Program Entails Allocation Of Builders' Steel

Washington

• • • **A new round in the steel** producers v. car builders "Battle of the Institutes" ended on Capitol Hill last week with creation of a car builders' task committee to allocate steel for production of freight cars.

S. M. Felton, president of the American Railway Car Institute, heads the new task committee which was organized at a meeting of steel producers, car builders and railroads called by Senator Reed, R., Kan.

Members of the car builders' task committee, besides Mr. Felton, include R. A. Williams, of American Car & Foundry; W. J. Curley, of General American Transportation Co.; F. M. Cowgill, of Ralston Steel Car Corp.; L. C. Haigh, of Magor Car Corp.; W. N. Barker, of Pullman-Standard Car Mfg. Co., and J. F. MacEnulty, of Pressed Steel Car Co.

Creation of the task committee was interpreted as a defensive move on the part of the car builders, who, according to Senator Reed, "have not carefully observed priorities" in the 10,000-car-per-month program. Steel producers, working through their own task committee, were able to prove conclusively at the meeting that sufficient steel had been shipped to car shops in recent months to meet the requirements of the 10,000 car schedule.

Senator Reed pointed the finger of rebuke at the car builders in stating that the industry "has been diverting steel which should have gone into new freight cars." This diversion, he said, includes the manufacture of mine cars, tanks, stoves and allied products.

The threat of antitrust prosecution, raised by the steel industry at the initial suggestion of allocated supply within the car building industry, was dispelled by Senator Reed and J. Monroe Johnson, ODT chief.

Both President Truman and Attorney General Clark have given assurances, Mr. Reed said, that the Justice Dept. will overlook industry collusion in allocating supply so long as the 10,000 car program remains in effect. Mr. Johnson has stated that he will get this agreement in writing. Senator Reed described the allocation program as a 6-month agreement among producers as to the number of cars to be turned out by each shop.

The car builders were scheduled to meet in New York Wednesday of this week to decide how many cars each car builder will turn out during the next 6 months. At this meeting car builders were to draw up specific plans as to how many cars each shop of each builder will turn out for each 30-day period of the 6-month program. The total will add up to 8500 cars monthly, which is the builders' share of the program. The railroad shops will turn out the balance of 1500 cars per month.

ODT will make actual allocations of steel tonnage to various shops. ODT will arrive at these allocations after conferring with task committees of steel producers and car builders. The steel task committee will determine what tonnage each steel mill will supply each car building shop. This particular allocation meeting will take place during the week of Oct. 27.

According to Mr. Johnson, this entire program was first advocated by ODT and endorsed by the steel committee in March 1947, but the car builders refused to accept the plan. Mr. Johnson stated that he personally is not sure the car builders will think the allocation program a good idea. He sees them squabbling among themselves, each claiming that the other is getting too much steel.

The ODT head declared that he sees no reason why output of 10,000 cars should not be reached in November—"certainly not later than December."

50 YEARS AGO

The Iron Age. *October 21, 1897*

• "The 1897 record of the Vermillion range, the standby of the great Minnesota Iron Co., will surpass any of its history. This range was opened in 1844 with total shipments of about 60,000 tons, which with scarcely an exception, have increased year by year. This season its shipments will be 1,350,000 tons. Many more new mines are in prospect on the Vermillion than at any time in its history. Shippers at the Mesaba range have recorded about 1,000,000 tons."

• "The Millikin foot-operated bicycle type drill press now being placed on the market by Manning, Maxwell & Moore, 113 Liberty St., New York City, is intended for all kinds of drilling, reaming and countersinking. The seat and handle bars are adjustable in all directions. One man on the machine and a man operating the drill press will drill a 13-16 in. hole in about one-fifth the time it takes a man with a ratchet to do the work."

• "At Pottsville, Pa., on Thursday, Sept. 30, the Committee of the Schuylkill Coal Exchange fixed the rate of wages for anthracite miners for the last half of September and the first half of October at $2.66 per day. This is one of the highest rates paid this year."

• "It is too soon to tell what may be the future of the transit trade via San Francisco between Eastern ports, but the beginning made this year promises to be large. Shipments of nails and bicycles destined for Australia and New Zealand have increased with the arrival of every steamer."

• "New bicycle tools recently put on the market by Rudolphi & Kummel Machine Works, No. Clinton St., Chicago, include a wheel truing table with a capacity of 15 to 20 wheels per hr which may be operated by a boy of ordinary intelligence."

Industrial Briefs . . .

• DIRECTORS ELECTED—Announcement has been made of the election of the new members of the board of directors of the National Assn. of Metal Finishers, Inc. These directors are: A. W. Olson, Industrial Plating Works, Inc.; F. A. Truden, Southern Finishers, Inc.; John Hilfinger, Hilfinger Corp.; D. J. Griffin, Birmingham Plating Works; and C. W. Logan, Logan Platers, Inc.

• PLANS BUILDING PROGRAM — Clark Bros. Co. of Olean, N. Y., a division of the Dresser Mfg. Co., plans a new assembly building and additions to its foundry and offices.

• CARBOLOY ENTERTAINS—Carboloy Co., Inc., Detroit, entertained more than 2000 visitors at a recent open house.

• MARKETING UNIT — Dual Press Co., St. Louis, has announced the appointment of Machinery & Welder Corp., St. Louis, as national wholesale distributors for sales and servicing of dual brake presses.

• WINS AWARD — Dr. W. A. Pennington, chief chemist and metallurgist of the Carrier Corp., Syracuse, N. Y., has been named winner of the Henry Marion Howe Medal for 1947, an award made annually by the American Society for Metals.

• MERGER — Acheson Colloids Corp. of Port Huron, Mich., has purchased the entire operating assets of E. G. Acheson, Ltd., England's largest producer of colloidal graphite. Despite the similarity in names, the concerns have previously been completely independent.

• OPENS DISTRICT OFFICE — Opening of a district sales and engineering office in the Keith Bldg., Cleveland, with R. P. Petersen as district manager, has been announced by Mechanical Handling Systems, Inc., of Detroit.

• SALES REPRESENTATIVES—Appointment of Cardox Corp. of Chicago as exclusive sales representatives for Continental inert gas generators has been announced by Continental Industrial Engineers, Inc., also of Chicago.

• REELECTED PRESIDENT — At the Gray Iron Founders' Society's annual meeting in Milwaukee, H. A. Stockwell, of Barbour-Stockwell Co., Cambridge, Mass., was reelected to the presidency.

• LEASES COAL PROPERTY—Republic Steel Corp. has completed negotiations with the Pittsburgh Consolidation Coal Co. for lease of the Banning #1 Mine and adjacent coal properties on the Youghiogheny River in the vicinity of Smithton and West Newton, Pa.

• PURCHASES PLANT — Buffalo Scale Co. has purchased the No. 2 plant of the McCallum Bronze Co. in Letchworth St., Buffalo, and will move its operations from Niagara St. to the new facilities. McCallum recently consolidated operations in its No. 1 plant in 4th St.

• EXPANDS PLANT — Toledo Stamping & Mfg. Co. has announced a $100,000 addition to its plant at 99 Fearing Blvd., Toledo, as part of a contemplated expansion program.

• NICKEL DISTRIBUTOR — International Nickel Co. has appointed Metal Goods Corp., 817 17th St., Denver, as distributor of primary nickel for Colorado, Wyoming and New Mexico.

• ORDNANCE PLANT SOLD — Industrial portion of the Des Moines (Iowa) Ordnance plant has been sold to Deere & Co., Moline, Ill., for $4,150,000.

• INSTITUTIONAL DAY—"A year of progress" was the theme of the second annual institutional day held at Willys-Overland Motors plant in Toledo.

Allegheny Ludlum Steel Announces Net Earnings

Pittsburgh

• • • **Allegheny Ludlum Steel** Corp. net earnings for the third quarter of 1947 of $1,036,332, equivalent to $0.80 per share of stock, have been announced by H. G. Batcheller, co-president. The earnings resulted from sales of $25,934,329.

Earnings for the year to date are the same as for the corresponding period of 1946, in both instances nine months' earnings equaling $3.54 per share.

Sales were somewhat less than the $28,328,451 billed in the second quarter, Mr. Batcheller said, but, he added, this was due more to vacation shut-downs than a slackening in demand.

Wilson Announces Profits

Schenectady

• • • **General Electric Co.'s** profit available for dividends amounted to $18,479,898 for the 3 months ended Sept. 30 and to $56,459,434 for the first 9 months of this year, equivalent to 64¢ and $1.96, respectively, a share of common stock, president Charles E. Wilson announced.

A dividend of 40¢ a share of common stock will be paid on Oct. 25 to 249,362 stockholders for the third quarter of 1947, making a total of $1.20 a share in dividends for the first 9 months of this year, the same amount as was paid for the corresponding period last year. This will be the 201st dividend paid on the company's common stock.

Earns 70¢ Per Share

Portsmouth, Ohio

• • • **Net earnings** of Portsmouth Steel Corp., after all charges including federal taxes, amounted to $907,450 for the quarter ended Sept. 30, 1947, president E. A. Schwartz has announced. This is equal to 70¢ per share on the common stock. For the first 9 months of the year net earnings were $2,941,130 or $2.26 per share. Net current assets as of Sept. 30, 1947, plus investments in listed securities, amounted to $11,162,195 or $8.58 per share.

Construction Steel . . .

• • • **Fabricated steel awards** this week included the following:

1180 **Tons,** Spring Green, Wis., bridge for the the State Highway Dept. through Industrial Contracting Co. to American Bridge Co., Pittsburgh.

590 **Tons,** Long Beach, Calif., Purlins transit shed, to Bethlehem Pacific Coast Steel Corp., San Francisco.

465 **Tons,** Pomona, Calif., Los Angeles County Fair building, through Sapp Construction Co., to Pacific Iron & Steel Co., Los Angeles.

270 **Tons,** Iselin, N. J., New Jersey Dept. of Highways, temporary underpass members for bridge, to American Bridge Co., Pittsburgh.

225 **Tons,** Douglas County, Wis., bridge Section F-028-4-14 through Industrial Contracting Co. to American Bridge Co., Pittsburgh.

210 **Tons,** Vermillion River, Kan., Bridge No. 100-87 for the Union Pacific R. R. to American Bridge Co., Pittsburgh.

• • • **Fabricated steel inquiries** this week included the following:

720 **Tons,** Stockton, Calif., bridges and railroad grade separation structures between Mariposa Road and Calaveras River, and between D St. and new Route 4, California Div. of Highways, Sacramento, bids to Nov. 26.

415 **Tons,** Vernon, Calif., Longview Fibre Co. factory building, William P. Neil Co., general contractor.

145 **Tons,** Ravalli County, Mont., bridge across Bitterroot River, Grantsdale Bridge Road, Montana Highway Commission, Helena, bids to Oct. 24.

• • • **Reinforcing bar awards** this week included the following:

1000 **Tons,** Minneapolis, elevator mill building for the Minneapolis Linseed Oil Co. through Fegles Constructions Co. to Truscon Steel Co., Cleveland.

900 **Tons,** South Omaha, Neb., sewer construction, Walsh Construction Co., Davenport, Iowa, low bidder.

700 **Tons,** Minneapolis, building for Western Electric Co. has been awarded to C. F. Haglund Contracting Co.

500 **Tons,** Cambridge, Mass., dormitory for M.I.T. to Bethlehem Steel Co., Bethlehem, through Aberthaw Co., Boston, contractors.

500 **Tons,** Portland, Maine, supermarket for First National Stores Inc. to Bancroft & Martin Rolling Mill, Portland, Maine.

150 **Tons,** Yakima County, Wash., crossing over Northern Pacific Ry. on Selah Road, through M. P. Munter Co., to Northwest Steel Rolling Mills, Seattle.

130 **Tons,** Fort Wayne, Ind., Lutheran hospital nurses home to Midstates Construction Co.

• • • **Reinforcing bar inquiries** this week included the following:

620 **Tons,** Stockton, Calif., road construction, bridges and railroad grade separation structures between Mariposa Road and Calaveras River, and between D St. and new Route 4, California Div. of Highways, Sacramento, bids to Nov. 26.

130 **Tons,** Madras, Ore., Deschutes Project, Bureau of Reclamation, Denver, Spec. 1994, bids to Nov. 25.

• • • **Railroad car awards** this week included the following:

Pullman Standard Car Mfg. Co. has been awarded 400 box cars for the New York, Chicago and St. Louis R. R. These cars will be built in the Michigan City plant starting in January. Pullman Standard has also been awarded 20 50-ton hopper cars by the Atlanta & West Point R. R., 30 50-ton hoppers from the Western of Atlanta R. R., 128 70-ton hoppers from the Birmingham Southern R. R. and 75 50-ton hoppers from the Georgia R. R. Pressed Steel Car Co. has received an order from the Gulf, Mobile & Ohio R. R. for 50 70-ton gondolas. The Burling R. R. will build 150 70-ton hoppers in their shops at Lincoln, Neb. The American Car & Foundry Co. has been awarded 3160 freight cars by the Atlantic Coast Line R. R.

AISC Convention To Be Held on Nov. 10 To Nov. 13 in Miami

New York

• • • **About 450 members** of the American Institute of Steel Construction, Inc. are expected to attend the twenty-fifth annual convention of the association, Nov. 10 through Nov. 13, at the Roney Plaza Hotel, Miami Beach.

Murray Shields, vice-president and economist, Bank of the Manhattan Co., New York, will talk on business planning for 1948. Herman H. Lind, Cleveland, president of the American Institute of Bolt, Nut & Rivet Manufacturers, will cover technical trends in construction.

A detailed program follows.

Monday, Nov. 10, 1947

9:00 a.m.—Registration.
10:00 a.m.—Presiding officer—T. R. Mullen, president, AISC.

Invocation of prayer.
President's annual address.
Reading of the minutes of the last annual meeting.
Address: "Some Guideposts for Business Planning in 1948." Murray Shields, vice-president, Bank of Manhattan Co., New York.
Report of the treasurer—Clyde MacCornack.
Report of the secretary—M. Harvey Smedley.
Announcement of committee appointments.
(1) Nominating.
(2) Resolutions.
(3) Time and place of next convention.

2:30 p.m.—Committee meetings.
6:30 p.m.—President's reception.
9:00 p.m.—Motion pictures.

Tuesday, Nov. 11, 1947

(*No Business Session*)

1:00 p.m.—Golf tournament—playing for "Steel Corp." and "Bethlehem" cups and other prizes.

Golf committee—E. F. Chobot, Chattanooga Boiler & Tank Co., Chattanooga—chairman.

Wednesday, Nov. 12, 1947

9:30 a.m.—Presiding officer—N. R. Patterson, first vice-president, AISC.

Motion picture.
Address: "Fasteners for the Fabricating Industry"—Herman H. Lind, president, American Institute of Bolt, Nut & Rivet Manufacturers, Cleveland.
Report of director of engineering—T. R. Higgins.
Report of chief engineer — Col. Jack Singleton.
Committee Reports.

2:30 p.m.—Presiding officer — Alden G. Roach, second vice-president, AISC Engineering symposium—members of AISC engineering staff and guest architects and engineers.

Discussion.

7:30 p.m.—Annual banquet—T. R. Mullen, toastmaster.

Thursday, Nov. 13, 1947

9:00 a.m.—Presiding officer — L. Abbett Post, executive vice-president, AISC.

Motion picture.
Report of controller—Paul L. Price.
Report of director of statistics — T. H. Hendrix.
Report of executive vice-president — L. Abbett Post.
Address: "The Building Industry — Present and Future" — Douglas Whitlock, chairman, Building Products Institute, Washington.
Report of nominating committee.

2:00 p.m.—Presiding officer—T. R. Mullen, president, AISC.

"Problems of the Industry" — informal presentations by members from floor.
Amendments to the bylaws.
Election of directors.
Unfinished business.
New business.
Report of committee on time and place of next convention.
Report of committee on resolutions.
Adjournment.

4:00 p.m.—Meeting of the board of directors.
7:30 p.m.—Get-together dinner — master of ceremonies—Walter C. Conger, Truscon Steel Co.

Entertainment.
Presentation of prizes.

Tinplate Allocations Stay at 120,000 Tons

Washington

• • • **First quarter** quota for tinplate exports in 1948 will remain the same as the quota for the current quarter, 120,000 tons, the Commerce Dept. announces.

An additional 22,000 tons will be licensed on a nonrated basis for use abroad in packaging foods for import into this country and for other uses permitted under Order M-43. At least 12,000 tons of the nonrated exports will be licensed in the form of electrolytic tinplate—the only type licensed for other than food packaging.

Proposed exports still fall short of actual foreign food packaging needs by more than 41,000 tons, the Office of International Trade says; the OIT estimated that minimum requirements for packaging perishable foreign foods call for 183,674 tons, while at least 30,000 tons are needed for other essential purposes.

This Man Will Help You

CUT POLISHING COSTS

He is a General Abrasive polishing engineer. With his wide experience in all phases of polishing and grinding, he is at your disposal to study your polishing operation and make recommendations for improvement. Many manufacturers have found that they can improve production and quality and at the same time reduce polishing costs by following the recommendations of the LIONITE representative.

If you feel that changes in your wheel set-up or in any other phase of your polishing procedure might be improved, ask to have the LIONITE representative call. There is no obligation.

GENERAL ABRASIVE COMPANY, INC.
Lionite and Carbonite Abrasive Grains
NIAGARA FALLS, NEW YORK, U. S. A.

Dutch Pig Iron Is Showing the Way Up Hard Recovery Road

Ijmuiden

• • • **While Netherlands** iron and steel production is relatively small compared with main producers, the country is important in the international iron and steel trade. It provides a good market for finished steel products, and it is one of the leading exporters of pig iron in the world.

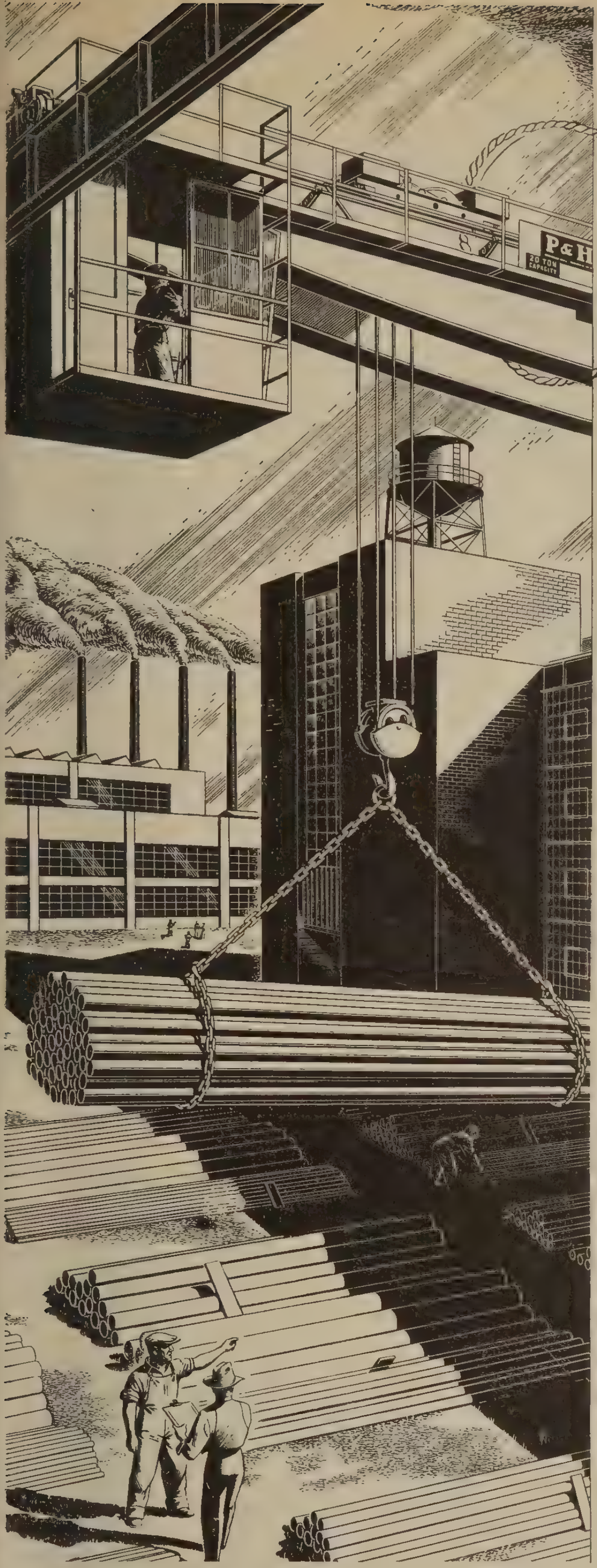
Although existing plants were severely damaged during the war (especially the blast furnaces of Ijmuiden and the coking plant of Sluiskil, which before the war exported almost its entire coke production), rapid progress has been made since the liberation.

Ed Note: This report from a European correspondent tells of the progress Holland has made, and hopes to make, on the painful task of industrial reconstruction.

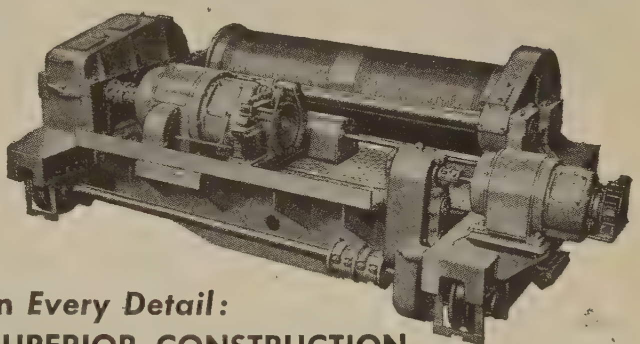
Two blast furnaces have been relighted at the Ijmuiden works and a third will probably be relighted as soon as the coke supply improves. During the 12 months ending Mar. 21, 1947, 222,000 tons of pig iron were produced at the Koninglijke Nederlandsche Hoogovens in Staalfabrieken. Of this amount more than half, 120,000 tons, was exported. Thus the Netherlands has taken an important place among the pig iron exporters of the world.

The blast furnaces of Ijmuiden were built a few years after World War I. Later a steel works was added at the same site. The newest addition to the area is a fifth openhearth furnace now under construction.

Just before the war a rolling mill was ordered from Germany. But after the outbreak of war the Germans sent the mill to the Reichswerke of Wattenstedt, where it was found at the end of the war and returned to Velsen near Ijmuiden. It was placed in operation May 16, 1947. Intended to have a final capacity of 170,000 tons of steel plate a year, this mill is now producing at a rate of 60,000 tons a year. Since it began operation the mill has produced 38,000 tons of plate, which was quickly gobbled up by the home market, where demand is far



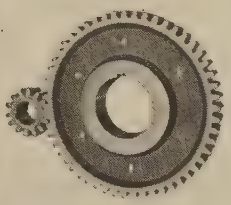
All These Added Values in P&H Heavy-Duty Crane Trolleys!



in *Every Detail:* SUPERIOR CONSTRUCTION

Modern 3-Reduction Unit

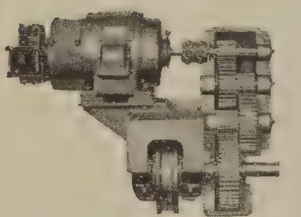
1. Unit gear case, integral with trolley side, mounts first two reductions.
2. Drum gear is enclosed in separate gear case.
3. For AC cranes, a mechanical load brake is mounted on intermediate shaft in gear case.
4. Second electric brake, if desired, can be mounted on motor pinion extension shaft.
5. Trolley sides are box-type construction for maximum lateral and vertical stability.
6. Main girt, also box section, is adequately diaphragmed to prevent roll and twist from swinging loads and welded integral with trolley sides.



Welded Gears

7. Tougher. Pinions and rim stock are high carbon steel.
8. Teeth are generated to precision gauge for quiet, smooth operation.
9. Pinion teeth are treated to 230 Brinell, gear teeth to 190 Brinell — for special requirements, to 500 and 450 Brinell, respectively.

Rotating Axles in MCB Bearing Boxes



10. Axles, wheels and bearings are easily removed.
11. Bearing blocks are solid steel, welded integrally with heavy-section web members and mounted directly to trolley side webs.
12. Roller bearings are used throughout and easily lubricated.

QUIET! P&H Trolleys *are* quiet. Safer, too. Added Values like these — including P&H-built motors and electrical equipment — are an important reason for P&H's continued leadership in the building of overhead cranes.

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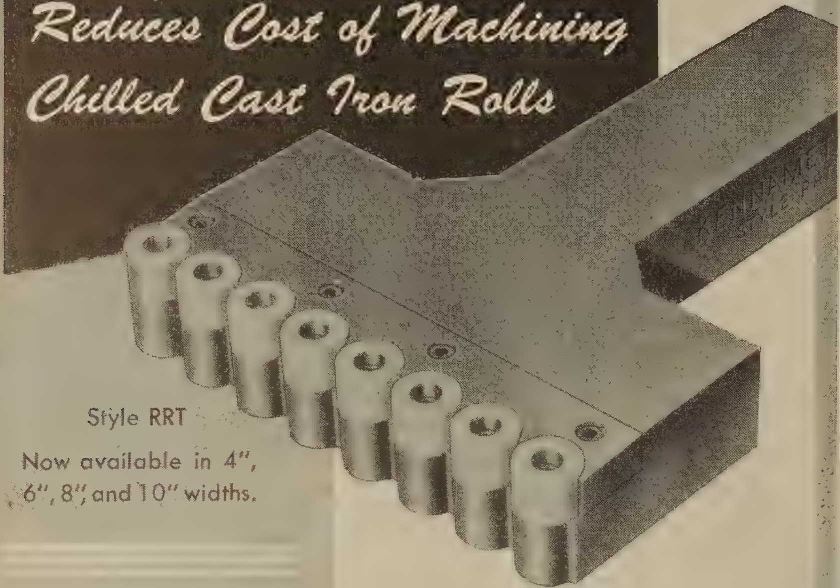
ELECTRIC CRANES • EXCAVATORS • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

New **KENNAMETAL**
ROUGHING ROLL TURNER
Reduces Cost of Machining
Chilled Cast Iron Rolls


Style RRT
Now available in 4",
6", 8", and 10" widths.

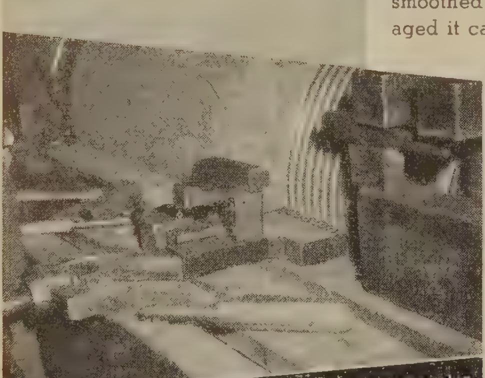
"The industry has urgently needed this development for many years to offset rising costs," say rollmen who have watched this new tool machine low and high Scleroscope rolls at faster speeds and heavier feeds . . ."

This new tool substantially reduces the time required for rough turning of chilled cast iron rolls of any Scleroscope hardness rating. Because its cutting edge consists of a series of screwed-on, long-lived Kennametal cylinders, instead of one solid blade, the following benefits are realized:

Operating advantages: Goes through rough scale easily; permits faster speeds and heavier feeds; trues up a roll quickly; reduces the work of the finishing tool.

Maintenance advantages: When cutting cylinders become dull they can be rotated to a new cutting position without taking the tool from the holder—many cuts can be made before the cylinders need to be sharpened. Sharpening of the cylinders is simple since only the tops need to be smoothed up. If one cylinder becomes damaged it can be quickly replaced with a new one, thus avoiding time loss and excessive tool regrinding.

Let us demonstrate this development under the actual conditions in your roll shop. That's the best way to be convinced that this new Kennametal cemented carbide tool does an outstanding job at the speed rates common to roll lathes and does it without babying, or special set-ups. Write for further particulars.


How It Works First cut turns a series of circular grooves with rough humps between. The tool is then repositioned and a second cut removes the humps, leaving a clean "scalloped" surface which is smoothed up with a block type of finishing tool (Kennametal Style RT).

KENNAMETAL
SUPERIOR CEMENTED CARBIDES
TRADE MARK REG. U. S. PAT. OFF.
KENNAMETAL *Inc.*, LATROBE, PA.

in excess of supply.

As a result of increased production and the high profits received on the export market, the earnings of the Ijmuiden company have almost doubled earnings of last year. These earnings were largely sufficient to cover the losses incurred during the war years.

Original plans called for the repair of the remainder of the war damage in addition to extending the production capacity of pig iron far above the maximum level of 298,000 tons reached in 1937. However, these plans, devised at a time when it was contemplated that German production would not exceed 5,800,000 tons, will probably be revised as a result of the new industrial plan announced for Germany. It is now expected that future plant extension will be on a more moderate scale.

On the brighter side, the new Benelux tariff soon to be applied will add to the competitive chances of Dutch pig iron on the Belgium market, as the rate for pig iron will be as low as 1 pct.

Imports of steel products during the first half of the year were far insufficient to meet the heavy demand, although they amounted to 400,000 tons, as compared with 638,890 tons for the entire year of 1946. This is still far below the rate of import of steel products during prewar years when imports averaged about 1,300,000 tons. Steel trade circles confirm signs of increasing competition in this market. Negotiations are reported underway between the Netherlands and Konzern Otto Wolf whereby the Netherlands would receive about 105,000 tons of finished rolled products. The order, to include rails and plates, would amount to about $10 million and would be placed by the Dutch company Netherlandsche Trust.

With the allocation to the Netherlands of machinery from the ball-bearing factory at Schweinfurt, the Netherlands will have a fairly complete plant for the manufacture of ball bearings for bicycles, vacuum cleaners and fractional horsepower motors. This is expected to increase the requirements for special steels hitherto not produced in the country.

Railroad reconstruction is an

(Advertisement)

Arbor Press of Welded Design Is Stronger, Lighter, More Economical

By K. A. Ruger, President
Ruger Equipment Co., Inc.; Cleveland 14, Ohio

FOLLOWING the modern trend in machine design, the new Ruger 10-ton portable hydraulic arbor press was designed for arc welded steel construction for two reasons: (1) because we have found arc welding is generally the most economical fabricating process; (2) to achieve the greatest strength from the least weight. The Ruger press can easily be moved from place to place by one man as the total weight is only about 100 lbs.

Fig. 1 shows the component parts. The plates are SAE 1020 mild steel, cut out on a flame-cutting machine guided by templates. The two side plates are braked to a 1⅛″ offset so they are closer together at the top. The base angles are formed from ⅜″ flat plate on a brake and the corners rounded on the flame-cutter. The cylinder cover is seamless steel tubing bored out to take the hydraulic cylinder.

The sides, angles, spacer plate and cylinder cover are assembled in a jig and tack-welded together. Nearly all welding is done in this jig, which is tilted to various positions for 100% downhand welding. Fig. 2 shows the cylinder cover being welded to the side plates.

Maximum welding speed is obtained by using Lincoln "Fleetwelding" technique—single pass, deep penetration welds in downhand position. "Fleetweld 11" electrode is used because of its speed, penetration and smooth concave bead which requires little finishing.

The side plates are welded to the base angles with the jig at a 45° angle (Fig. 3) to make single-pass fillets. The spacer plate is welded to sides with 1″ intermittent welds and the ends of the base angles are butt-welded to the sides. The press is then removed from the jig, turned upside down and the angles joined to bottoms of the side plates with deep groove butt welds.

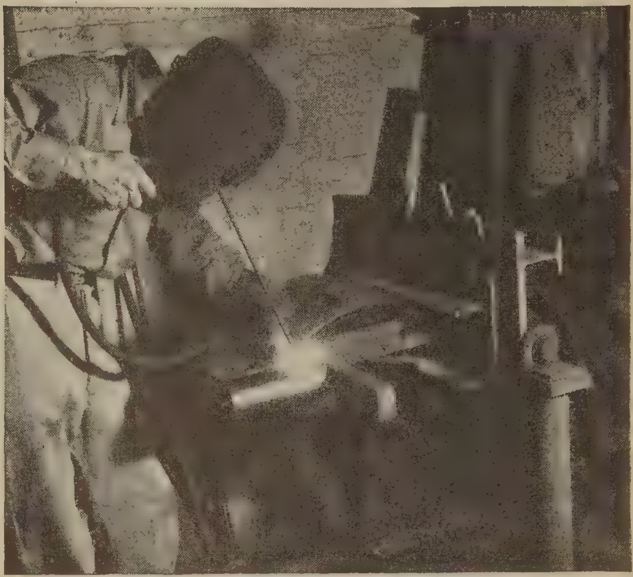


Fig. 2. Welding cylinder cover to the side plates.

The cylinder welds are then ground down flush with the sides, and the other welds cleaned with a grinder. The hydraulic pump assembly is installed and a 16-gauge sheet metal cylinder cap is welded on with "Fleetweld 7," which makes a convex bead for a neat, rounded appearance. Then the unit is painted and crated.

Fig. 4 shows the completed press. Its overall dimensions are: 23½″ high, 11¼″ wide and 20″ long from front to back. The throat height is 11″ and ram stroke is 6⅝″. Ram automatically retracts to top position by a built-in counter balance.

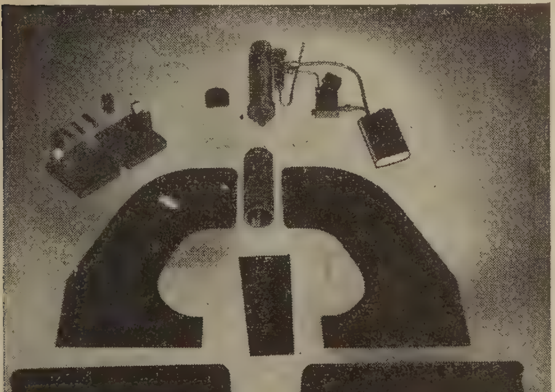


Fig. 1. Component parts of the Ruger Press.

Fig. 3. Welding base angles to side plates.

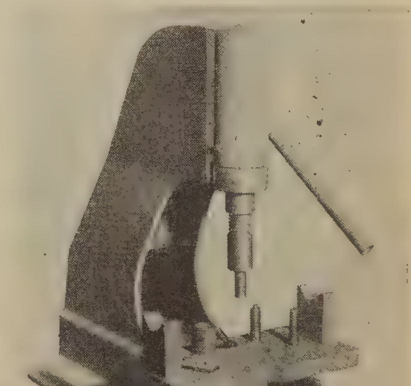


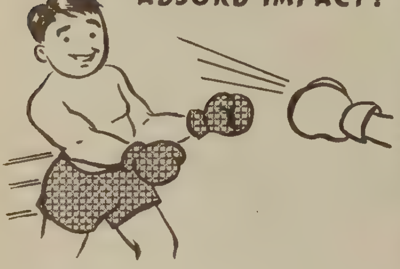
Fig. 4. The completed press.

The above is published by LINCOLN ELECTRIC in the interests of progress.
For Studies in Machine Design, write The Lincoln Electric Company, Dept. 1411, Cleveland 1, Ohio.

SURE, WE'VE MET...I'M CRIMPY THE BUFFALO WIRE CLOTH MAN

I don't mean to brag, but **WHEN I'M SQUARE MESH STAINLESS STEEL** . . . you can't top me for sizing, separating, bolting and filtering jobs . . . especially in such industries as abrasive, sand, refractory, minerals, salt, chemical, flour, food, textile, paint and pharmaceutical.

I'M TOUGH – CAN ABSORB IMPACT!



It's hard to wear me out . . . and then I "wear clean". In fact, I last 4 times longer than many other fabrics. Break? I doubt if you can do it. After all, I've twice the tensile strength of ordinary steel.

100 PROOF...THAT'S ME!

I'm rustproof, tarnish proof, corrosion resistant, wear resistant, non-contaminating, non-discoloring. Need any more proof? Even high temperatures don't weaken me.

MOISTURE OR HUMIDITY DON'T BOTHER ME!

I'm efficient in all kinds of weather...don't take on moisture or swell like non-metallic cloths. That's why I'm used so much for bolting.

I'M FAST AS LIGHTNING!

With my smooth, polished surface, things whiz through me . . . very important in the smaller meshes, you know, to avoid blinding.

Buffalo SQUARE MESH STAINLESS STEEL WIRE CLOTH is available in bolting and market grades, as well as special types for Salt Filter Slurry Screens and Backing Wire. It is furnished in rolls, cut pieces, reel covers or panels bound with webbing.

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important part of the Dutch program. A long term program has been planned, extending to the year 1970. Already in operation is a new factory at Zwolle which is producing diesel engines of up to 1000 hp.

Mr. Huysmans, Minister of Economic Affairs, has stated that it is generally agreed that Holland, in a struggle to regain its prosperity, will have to follow a path of continuous industrialization. But a clear distinction should be made between long and short term aspects. Scarcity compels the Netherlands to first encourage those industrial investments from which the quickest results can be expected. Shortages of funds and skilled labor are the chief delaying factors.

French Steel Production Decreases During August

Paris

• • • **French iron and steel** production decreased sharply in August. Several factors figured prominently in the decline. Listed among these were the railway and mine strikes, paid holidays, and the heat.

Compared with July production figures, only pig iron showed an increase from 409,000 tons to 422,000 tons. The better showing of pig iron production was attributed to the effect of fewer paid holidays and the improvement of coal imports during the two previous months.

But steel production declined from 473,000 tons to 451,000 tons; a further drop from the maximum of 505,000 tons reached in April. Rolled products dropped from 310,000 tons to 280,000 tons, far below the March maximum of 369,000 tons.

In July only 67 of 184 existing blast furnaces were in operation; 57 converters were in operation, as compared with an average of 86 in 1938. Only 61 openhearths were producing, as compared to 82 in 1938; 83 electric furnaces were producing, as compared to 73 in 1938. In spite of the progress made in electric furnaces, severe drouth forced a reduction in electricity available, with the result that electric steelworks production declined from 42,000 tons in July to 30,000 tons in August.

COAL MINING, TOO, HAS "GONE MODERN"

Most of the work of mining America's coal used to be done by broad backs and bulging muscles. Nowadays, much of it is done by machine.

The timbering machine shown above, for instance, hoists and positions the heavy ceiling beams used in timbering the roofs of the modern coal mine. And this is but one of many types of coal-mine equipment . . . such as power drills, cutters, loaders, conveyors . . . now used to lessen the manual labor—and to increase the per-man production—of the American bituminous coal miner.

Today, more than 90% of all bituminous coal mined underground is mechanically cut . . . more than 50% is mechanically loaded . . . only about 5% is mined by pick and shovel!

Thanks to huge investments in mechanized equipment, to skilled management and to keen competition in the industry, America's bituminous coal mines are the most productive—and pay the best wages—in the world. They are able not only to meet this country's stupendous needs for coal, but also to help rebuild the war-shattered economies of other nations.

Living conditions of coal miners are keeping pace with improvements in their working conditions.

Today, about two-thirds—over 260,000—of the nation's bituminous coal miners either own their own homes or rent from private landlords. And among the remaining third, who now rent from their companies, there is a growing trend to buy the houses they live in.

Home-ownership among miners is increasing—due in no small measure to encouragement and financial aid from mine owners who realize that a man becomes a better worker and a better citizen as he develops pride in "a home of his own."

BITUMINOUS COAL

BITUMINOUS COAL INSTITUTE
Washington, D. C.
Affiliate of NATIONAL COAL ASSOCIATION

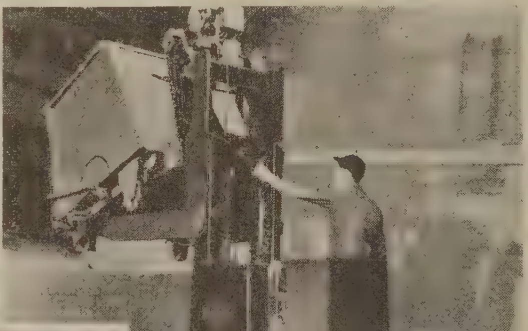
BITUMINOUS COAL . . . LIGHTS THE WAY . . . FUELS THE FIRES . . . POWERS THE PROGRESS OF AMERICA

BAKER TRUCK

delivers 35 hours' work in 3!

At the Erie, Pa. plant of a large paper manufacturer it formerly took seven men five hours to unload, weigh and store a box-car load of pulp. Today a Baker Truck with one operator can do the job in 3 hours!

This Erie plant has a fleet of 24 storage-battery powered industrial trucks in daily operation—with several more on order. Annual production is well over 100,000,000 lbs. of paper, comprising almost 3,000 different kinds, sizes and colors. Trucks are used for unloading and storing incoming raw materials, transporting materials in process, warehousing finished products, and for loading orders for shipment into box-cars. "In all cases" the company states, "sizeable savings were made, not only in handling cost, but also the jobs in which the trucks were used were made many times easier."



Substantial savings were made by using a Baker Hy-Lift Truck with special tilt-type platform for charging beaters with pulp.

Baker Fork Truck picking up unit load of lap pulp for loading into box-car.

Material Handling operations at this plant are controlled by a central department, which integrates all operations and enables the company to utilize its equipment to the best advantage. Where possible, materials are handled in unit loads on pallets or skids. Plans are under way to have all suppliers ship materials on pallets —incoming shipments not now on pallets are palletized at the receiving point. A new warehouse just completed was designed around mechanized unit-load handling with electric-powered trucks and tractor-trailers. The results are a maximum use of warehouse space, a minimum of handling time and cost, and better, faster service for the company's customers.

Let the Baker Material Handling Engineer show you how similar savings are possible in your plant.

EITA
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Predicts Shortage Of Technical Manpower To Continue Into 1949

Pittsburgh

• • • **Companies are** short of technically trained men today, and competition for these men is keener than it ever was, according to H. N. Muller, manager of the educational department for the Westinghouse Electric Corp. Engineering colleges report a 100 pct increase in the number of companies now interviewing their graduates in comparison to prewar years.

This latest manpower shortage Mr. Muller predicted, will last wel into 1949 or 1950. It stems directly from industrial expansion, coupled with the relatively few engineers and scientists graduated from colleges during the war. Westinghouse is now recruiting from the colleges over 100 more men each year than during prewar years.

Starting pay for college graduates is far above prewar levels Mr. Muller explained. Veterans of World War II are given additional consideration and start at rates even above the new high scale for non-veterans.

Many of the company's top executives are products of graduate student training. A good example is George H. Bucher, former president of Westinghouse and now vice-chairman of the board of directors.

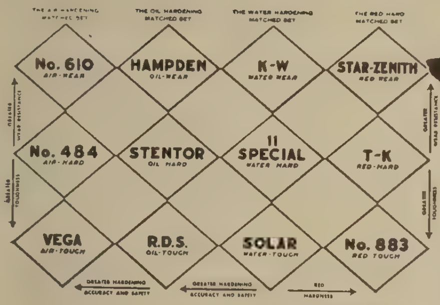
For those without a college background Westinghouse offers similar opportunities for advancement—in its apprentice training program now in its fifty-second year.

The apprentice works on a 40-hr week basis. Four of those hours he attends class where he is taught applied mathematics, science, physics, blueprint reading, advanced tool, jig, and die design, and self-development, by experts who are all former journeymen and have had specialized training in teaching. The other 36 hr he spends right on the job working in the training section set aside for apprentices and engaged in actual production work.

He stays there from 1 to 2 years, depending upon his course of training. He then is transfered to a regular section of the plant, where he works on a normal schedule, and still attends school.

FROM TOOLMAKING TO ACTUAL PRODUCTION...

Here's Real Help that reduces costs!


THE AIR HARDENING MATCHED SET
THE OIL HARDENING MATCHED SET
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AIR-WEAR
HAMPDEN
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WATER WEAR
STAR-ZENITH
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OIL HARD
11 SPECIAL
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GREATER WEAR RESISTANCE
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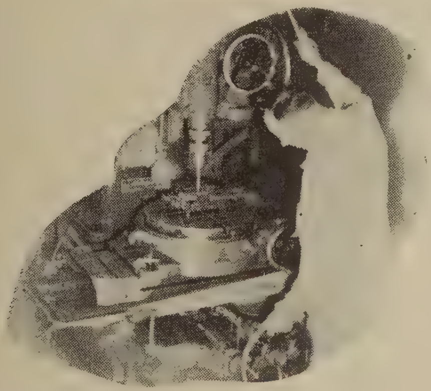
HELP IN TOOL STEEL SELECTION!

The Carpenter Matched Set Method of Tool Steel Selection enables you to quickly choose the right steel for best results on each tooling job. Just by following the arrows on the Matched Set Diagram, you can determine exactly which steel to pick for extra wear resistance, greater toughness, hardening accuracy and safety, etc.

Carpenter
MATCHED TOOL STEEL MANUAL
THE CARPENTER STEEL COMPANY

HELP THAT SIMPLIFIES HEAT TREATING!

To further insure your results, complete information on the properties and behavior of each tool steel is yours—along with detailed, easy-to-use heat treating instructions.



HELP TO INCREASE TOOL LIFE!

If the tools you are using fail prematurely in service, the Carpenter Matched Set Method helps you determine which steel has the right properties for your job—enables you to more quickly arrive at the one steel most likely to boost output per grind and reduce tool failures.

And you get many more advantages when you use the Carpenter Matched Set Method. With far fewer steels to "work with," inventories are reduced and chances of tool steel "mix-ups" are fewer. Put this cost-reducing program to work in your plant, now. Ask for your copy of the new Carpenter Matched Tool Steel Manual. Its 189 pages of selection and heat treating data are your starting point for real savings. Just contact your Carpenter representative.

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MATCHED TOOL STEELS

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QUENCHING CARS AND LOCOMOTIVES

All Atlas Coke Oven Equipment is of heavy-duty construction permitting the peak operating conditions required in today's stepped-up production schedules. As a result of years of experience, Atlas is able to design and build equipment, to meet the requirements of each particular coke plant. Detailed information available on request.

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Allows Premium Payment For National Holidays

Washington

• • • **Nine national** holidays will be recognized in allowing premium payment claims for production of cast iron soil pipe, the Office of the Housing Expediter declared in an interpretation of Reg. 8. They are: New Year's Day, Washington's Birthday, Memorial Day (May 30), Labor Day, Columbus Day, General Election Day, Armistice Day (Nov. 11), Thanksgiving Day, and Christmas.

Visiting American Plants

Pittsburgh

J. W. TAYLOR

• • • **J. W. Taylor,** works manager of the Audley Engineering Co., Ltd., Newport, Shropshire, England is visiting the valve manufacturing plants of the Rockwell Mfg. Co. to study methods and equipment used in valve building in this country.

Audley is the British licensee for the manufacture of Nordstrom lubricated plug valves, built in the United States by the Nordstrom Valve Div. of the Rockwell Mfg. Co.

Receive Retroactive Pay

Detroit

• • • **Under wage provisions** of the new Ford contract, workers will shortly receive retroactive pay checks averaging more than $100 per worker.

After the 11½¢ per hr wage increase, the straight time average rate of Ford workers is reported to be approximately $1.52 per hr.

According to a spokesman for the UAW-CIO this is 9¢ per hr above the average rate of Ford's largest competitor.

In accepting the wage increase the Ford workers voted 51,832 for a wage increase against 16,720 for a proposed pension plan which has been described by some sources to be one of the most liberal ever offered to hourly paid workers.

FACTS WORTH NOTING

ZIRCON

COMPOSITION

Zircon (Zirconium Silicate) $ZrSiO_4$ . . 67% ZrO_2+33% SiO_2

MECHANICAL, THERMAL, CHEMICAL AND PHYSICAL PROPERTIES

Crystal Structure	Tetragonal
Molecular Weight	183
Molecular Volume	38.7
Moh's Hardness	7.5
Thermal Conductivity cal/°C/sec/cm/cm^2 (up to 700°F=0.031 Watts/in^2/in/°F)	0.0046
Refractive index Ne	1.94-2.02
Refractive index for No	1.92-1.96
Birefringence	0.045-0.058
Mean Specific Heat (21-51°C)	0.132
Softening Point	3452°F
Melting Point	4622°F
Thermal Expansion (mean reversible 20°-1000°C)	4.5x10^{-6}/°C

Insoluble in aqueous alkaline solutions and in all acids except hydrofluoric (slightly soluble).

ELECTRICAL PROPERTIES

Dielectric Constant E		12 ± 1
Resistivity at °F in Megohms/in^3	1100°	170
	1200°	120
	1300°	70
	1400°	25
	1500°	7
	1600°	2.5

Properties of Zirconium Silicate, developed by over 30 years of TAM research, find large scale usage in a range of applications. Increasing tonnages are used in the manufacture of dry process and porcelain enamel frits. For opacification and craze resistance of ceramic glazes, $ZrSiO_4$ also finds volume application. It is used extensively in acid and electrical resisting cements and in the manufacture of high temperature and special refractories. Its high mechanical strength and thermal shock resistance make it ideal as a body constituent in certain electrical porcelains. As a mold and core wash ingredient and as a mold material in precision alloy castings and kiln furnace coatings, there is a mounting demand for Zirconium Silicate.

TAM

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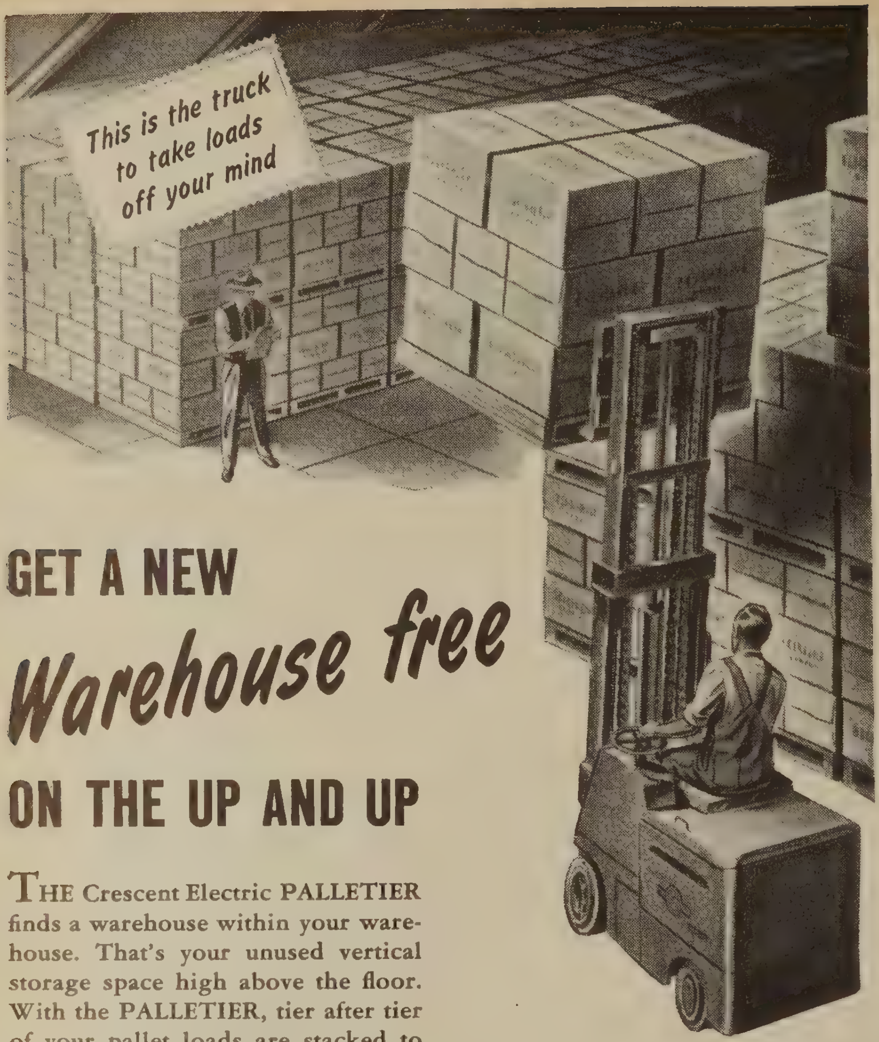
Executive Offices: 111 Broadway, New York City General Offices and Works: Niagara Falls, N. Y.



GET A NEW
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ON THE UP AND UP

THE Crescent Electric PALLETIER finds a warehouse within your warehouse. That's your unused vertical storage space high above the floor. With the PALLETIER, tier after tier of your pallet loads are stacked to ceiling height. Up they go without heave ho . . . safely, speedily.

Your loading and unloading time shrinks to a minimum. Up steep ramps, down narrow aisles travels the maneuverable, power-packed PALLETIER. Low in initial cost, low in maintenance costs, it soon pays for itself by slashing your handling costs.

Send for free bulletins illustrating and listing Specifications for 1000, 2000, 3000 and 4000-pound Crescent Electric PALLETIERS.

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1105 Willow St., Lebanon, Pa.
Industrial Truck and Tractor Specialists Since 1917

FIVE IMPORTANT FEATURES
Only the PALLETIER Has Them All

- **Full Magnetic Contactor Control** protects against forced acceleration—extends life of motor and tires.
- **Complete Stability** with load fully elevated and tilted forward.
- **Battery Power** eliminates fumes and fire hazard.
- **Full Accessibility** to all mechanisms for easy inspection and maintenance.
- **Maximum Visibility**—operator spots and tiers without stirring from seat.

Crescent
ELECTRIC
PALLETIER
REG. U. S. PAT. OFF.

OTS Makes Available German War List Of Ferrous Materials

Washington

• • • **A German war** list of rolled and forged steels arranged according to chemical composition is now on sale by the Office of Technical Services, Dept. of Commerce. The list was obtained by investigators for the Combined Intelligence Subcommittee.

The list, most of it in tabular form, consists of nine sections:

Section I—Contains details of unalloyed steels of "edelstahl" quality. These are steels requiring special care in production. The list tabulates the composition of the steels and is arranged according to application groups—that is, steel for plates, wire, tubes, etc.

Section II—Covers alloy steels, mostly those of edelstahl quality, and some silicon and manganese steel types. The list is subdivided according to composition—silicon, manganese, vanadium bearing, etc.

Section III—The steels reviewed in Section II are arranged as alloy steels by application groups (permanent magnets, valves, etc.). The quality grouping and the method of manufacture are also shown.

Section IV—Tabulates production details during the first half of 1943 and the first quarter of 1944 for the steels discussed in Sections I and II.

Sections V, VI, VII—Cover steels for ammunition, armour, and arms, respectively.

Section VIII — Contains two tables. One tabulates the monthly production of edelstahl steels from the beginning of the war to October 1944 arranged according to main application groups. The other gives total steel production by different manufacturing processes by months.

Section IX — Cites changes made in the composition of high speed steels during the war.

Orders for the report, (PB-79173; German War List for Ferrous Materials; photostat, $9; microfilm, $3; 130 p) should be addressed to the Office of Technical Services, Dept. of Commerce, Washington 25.

A TYPICAL EXAMPLE
OF NATIONAL STANDARD
Service in Wire

Photo courtesy of Woodall Industries, Inc.

A stitch in metal saves *plenty!*

STITCHING with wire is a relatively new way of joining metal to metal, or metal to almost any other material. Since speeds up to 100 stitches a minute are possible . . . and since wire is economical . . . there are tremendous time-and-cost savings compared with other methods of fabrication.

Success of the whole idea hinges largely on special wire. For the wire must be *stiff* to penetrate metal. It has to be *strong,* up to 330,000 psi in tensile strength, to provide a lasting grip. Still it must be *ductile* to take tight 180° bends without cracking or breaking.

Here, at our Worcester Wire Works Division, this unusual wire is produced in several strengths, sizes and finishes to meet all metal stitching requirements perfectly! Here too, the skill and care for which Worcester Wire Works has long been known result in exceptional uniformity—a particularly great advantage for any user of machine-fed wire.

Do you have a problem involving wire? Perhaps, as in metal stitching, a new, specially developed wire is the answer. Maybe you need only some specialized engineering help on the use or fabrication of wire. In any case, Worcester Wire Works stands ready to serve you, to give you the advantage of engineering experience, special skills and techniques that have been over 30 years in the making. It's your standing invitation to out-of-the-ordinary, personalized service in wire.

NS
WORCESTER
WIRE WORKS
Division
NATIONAL-STANDARD COMPANY

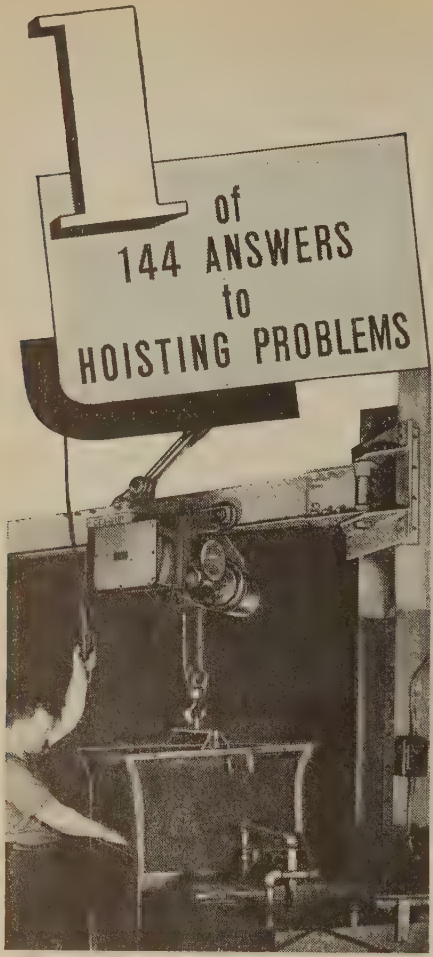
DIVISIONS OF NATIONAL-STANDARD COMPANY

WORCESTER WIRE WORKS
Worcester, Mass.
Round Steel Wire, Small Sizes

NATIONAL-STANDARD
Niles, Mich.
Tire Wire, Fabricated Braids and Tape

ATHENIA STEEL
Clifton, N. J.
Flat, High Carbon, Cold Rolled Spring Steel

WAGNER LITHO MACHINERY
Jersey City, N. J.
Lithographing and Special Machinery



A cleaning operation required frequent lifting of a basket of parts in and out of the tank.

A Reading Electric Hoist with unit construction provided a special solution without special engineering cost. The built-in trolley permitted easy movement. The rigid arm push button gives control of both motions. The D.C. motor and controller were also standard mechanisms.

The Reading Electric Hoist unit construction plan gives you 144 combinations of standard mechanisms to give special solutions to your materials handling problems.

For full information, write for "144 Answers to Your Hoisting Problems".

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2101 ADAMS ST., READING, PA.

CHAIN HOISTS • ELECTRIC HOISTS
OVERHEAD TRAVELING CRANES

READING HOISTS

AEC Board Appointed As Industry Adviser For Atomic Research

Washington

• • • **James W. Parker,** president of the Detroit Edison Co., has been appointed chairman of an Atomic Energy Commission advisory board to keep industry informed of developments in atomic research.

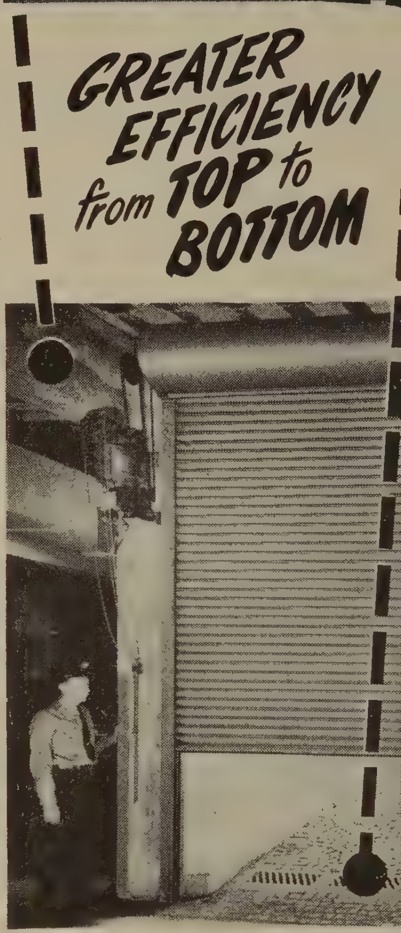
In announcing Mr. Parker's appointment recently in Detroit, David E. Lilienthal, Commission chairman, said he hoped the new board would aid AEC in making rapid headway toward the earliest practical application of atomic energy by private business.

Members of the new board of consultants will be cleared by AEC for access to secret data necessary for their studies and recommendations, Mr. Lilienthal said. AEC's power laboratory at Schenectady, operated by General Electric, as well as its Oak Ridge, Tenn., plant are scheduled for study by the industrialists.

Business officials who have been invited to serve on the new board include O. E. Buckley, of Bell Telephone Laboratories; Donald Carpenter, of Remington Arms Co.; Gustav Egloff, of Universal Oil Co.; Paul Foote, of Gulf Research & Development Co.; Robert G. Wilson, of Standard Oil Co. of Indiana, and Walker Cisler, of Detroit Edison Co.

"We must develop incentives for industry to get into this field," Mr. Lilienthal said in announcing the initial appointments. "We must carry on a program which will encourage in atomic energy the same kind of competitive effort which has made the automobile and chemical industries what they are today—that competitive effort which keeps all American industry pushing at the frontiers of technology. Unless the initiative, the technical skill and the managerial ability of American industries are brought to bear with maximum effect on the problems of atomic energy development, the people of the U. S. will not realize the full benefits of the new field."

KINNEAR
Rolling Door



OPENED OR CLOSED—or in actio
Kinnear Rolling Doors offer greater e
ciency "from top to bottom."

They open straight upward, coil
compactly above the doorway out
reach of damage by wind or vehic
They clear the entire doorway, leav
all surrounding space fully usable at
times.

When closed, Kinnear Rolling Do
offer the extra protection of all-steel c
struction—against wind and storm da
age . . . theft or intrusion . . . fire
explosion.

The rugged Kinnear Motor Opera
can be added to any Kinnear Roll
Door for maximum speed and ease
operation, with push button controls
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Kinnear Rolling Doors are built
any size, for new or old buildings. W
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TRADE MARK

Over the years, International Nickel has accumulated a fund of useful information on the selection, fabrication, treatment and performance of engineering alloy steels, stainless steels, cast irons, brasses, bronzes and other alloys containing Nickel. This information is yours for the asking. Write for "List A" of available publications.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET
NEW YORK 5, N. Y.

MACHINE TOOLS

. . . *News and Market Activities*

Fourth Quarter Tool Rise Will Total $300 Million for 1947

• • • **For the machine** tool industry, a fourth quarter spurt of any significant proportions will probably make 1947 certain to be a $300 million year. And to many observers, this is as it should be, for less remunerative times are certainly ahead.

While more pessimistic pundits are loathe to predict, or even outline just what the first quarter of 1948 will bring, some of the machine tool industry's best dopesters are confident that the industry will do well in 1948 to equal 1947. In other words, this year's business may look awfully good by the end of next year. After the first of the year, anything can happen.

The brutal facts of the case are that even now, the industry is not doing as well as in 1939, which was a good year for the machine tool people. If 1939 is to be taken as some sort of a base period, the machine tool business today is lagging.

In the contract tool and die business, things seem to be picking up somewhat, although competent observers feel it would be premature to call it a trend. Volume of work in most shops remains high and backlogs are constant.

Orders fell off slightly in August, but not to any great extent, as they have been below the current rate of operations for some time, but the industry dollar volume still remains ahead of last year's.

Major segments of the tool and die industry are hoping for a decided upturn in new tooling, but the general outlook at the moment is indefinite.

Tool and die shop employment had been declining until August, when the trend was reversed.

In Cincinnati, some machine tool builders have indicated that much time is still being taken in appraising the results of the show. While optimism over potential demand more than overshadows the present condition of the order books, inquiries have been particularly brisk since the show, and builders are anticipating a sharp upturn in new business as a result, within 30 to 60 days.

Some Tool Men Confident That Industry Will Do Well In 1948 to Equal 1947

○ ○ ○

Present business continues to be spotty, about evenly divided between domestic and foreign sources. Most active in the export market at the moment are England, Switzerland, and South America. This is not, however, indicative of large ordering necessarily, but rather the prominence of the countries on order books in the face of others' absence at the present time. New foreign firm orders are making up about 50 pct of the total volume. Backlogs are down, but plants in the Cincinnati area are running at a fair level, a moderate amount of which is confined to contract work.

In Detroit a survey of dealers and machine tool manufacturers indicates that supplies of most lines of equipment are continuing to feel the beneficial stimulation of the recent Chicago showing. While inquiries are said to be brisk, the number of orders being placed indicates that the full effects of the show are yet to be felt.

There are strong indications that important engineering decisions are being made on a broad scale by auto executives these days and some sources have reported a recent rush of orders that has been attributed in part to a desire on the part of manufacturers to get on the books at the earliest opportunity. The expected placing of orders in Detroit by competitors, plus possible international complications, have been mentioned as possible reasons for the present burst of activity.

Producers of transfer type machines are very busy, as they have been for many months and the certainty that this type of labor saving equipment will play a prominent part in the production of postwar cars is now well established.

A promising aspect of recent developments is that some sources report a substantial booking of orders from small firms which it had been anticipated would be reluctant to invest large sums in machine tools at this time.

There are as yet no indications that the recent delay in introducing the 1948 Buick will result in a similar delay in deliveries of machines for the new models. Latest indications are that delivery dates originally agreed upon will hold.

In the East a smattering of builders report inquiries since the Chicago show, but elsewhere in New England inquiries and actual sales are hard to locate. However, the trade is confident a lot of interest resulted from the show and that business will sooner or later develop. Just when, they say, is anybody's guess.

A reflection of business conditions is found in foundry activities. Those builders operating their own foundries have reduced weekly melt, while independent foundries are actually looking for machine tool business, whereas 2 or 3 months ago tool builders were pushing them for castings.

Surplus Property At Honolulu Is Offered

Washington

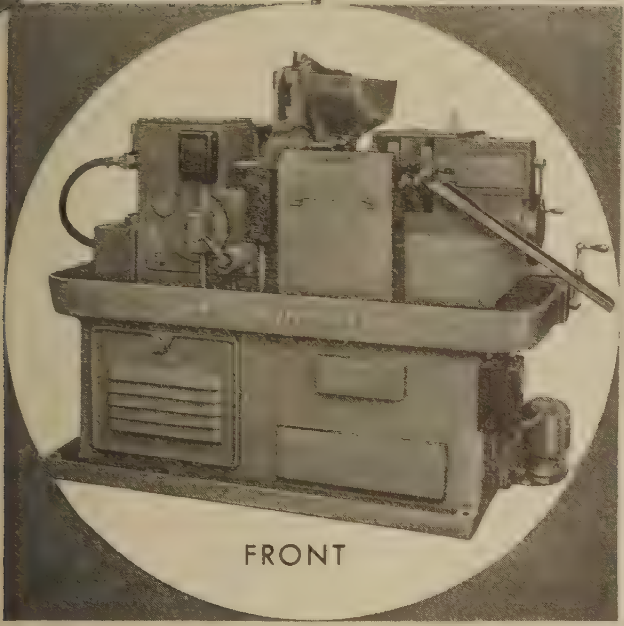
• • • **Nearly $50 million** of surplus property, including considerable amounts of machinery and machine tools, will be offered at both fixed price and competitive sealed bid by the Honolulu regional office of WAA in late November.

Included in the offerings will be $1.4 million worth of general and special industrial machinery and equipment, $4.5 million worth of trucks and trailers, $1 million worth of automotive and machinery spare parts, $560,000 worth of roadbuilding and contracting equipment, $300,000 worth of steel strappings and seals, and $160,000 worth of machine and other tools.

WAA also has offered for sale at Atlantic, Pacific and Gulf coast locations more than 100 shipyard cranes at fixed prices ranging from $5000 to $80,000 each.

It all hangs on the—

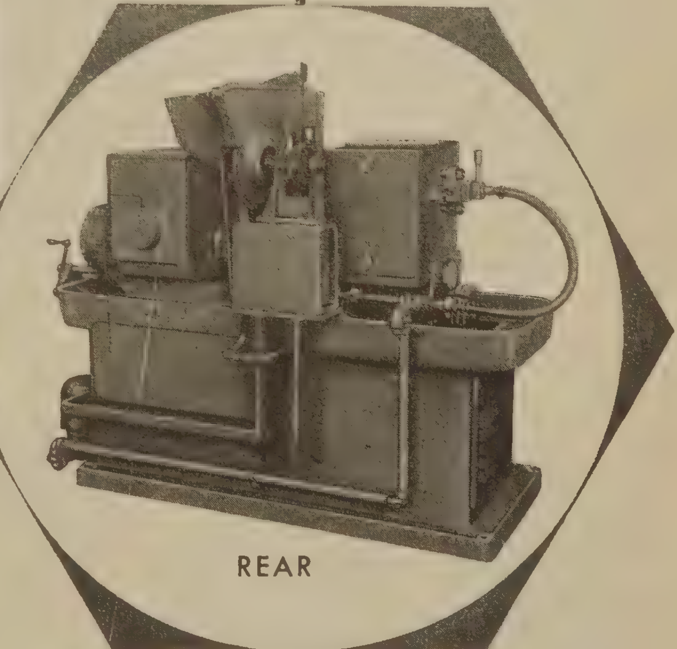
Stationary Straight Shank Tap!



FRONT

Automatic NUT TAPPERS—

Precision
Production
Efficiency
Economy



REAR

The superiority of Waterbury-Farrel Automatic Nut Tappers resides in the fact that the Stationary Straight Shank Tap guarantees a thread exactly square with the face of the nut, with no twisting nor out-of-square action. Furthermore, with straight shank taps, there is no pre-loading — no reversing or "backing-out." These high-speed tappers produce Nos. 3 and 4 fits on a quantity basis, as well as the ordinary commercial product.

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Waterbury, Connecticut, U. S. A.
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NONFERROUS METALS

. . . ***News and Market Activities***

Copper

• • • **There is no weakness** in the copper market with brass mills coming into the market for larger tonnages and the wire mills consuming at record tonnages. Bridgeport Brass Co. is the fourth mill to announce a firm price policy for mill products deliverable within 60 days. It is not likely that additional mills will follow suit within a short time, especially those mills operating on a last-in-first-out inventory policy. Copper producers are absorbing the recent freight rate increase so that there is no change from the 21.50¢ price delivered the Valley. Although some buyers have been bearish about the price of copper for several months, consumer demand in this country at present is reported to be sufficient to absorb domestic production and a large share of South American production. Informed observers are unable to foresee the probability of any price change in either direction for several months. Some factors anticipate the possibility of another tight copper market in the future but any move to increase the price of domestic copper would meet resistance from the low cost producers.

September figures released by the Copper Institute include South American, Canadian, Mexican, Spanish, and African copper statistics for the first time since the beginning of the war. Domestic copper shipments in September are nearly 1000 tons below the August low and totaled 95,582 tons. However, combined shipments increased more than 11,000 tons in September to 170,301 tons. Domestic refined production increased by 4000 tons to 92,088 tons. Combined refined production increased by 19,000 tons to 180,970 tons. Domestic refined stocks at the end of the month increased by 3000 tons to 80,113 tons.

The foreign copper market continues in active and while there are a number of inquiries reported, few sales result. However some transactions are reported at 21.50¢ f.a.s. New York.

•

Zinc

• • • **Zinc producers** are encouraged by improved demand for the metal since the summer decline. They report that demand is specially good for Prime Western and Special High Grade. Sale of the former grade is apparently limited only by the availability of steel. The freight rate increase is being applied to grades other than High Grade and Special High Grade. This adds 0.0555¢ per lb to Prime Western, Intermediate and Brass Special delivered to New York. Members of the industry who have visited recently throughout the Midwest report that business everywhere is booming and conclude that this seems to predict a continuing strong market in this metal and others.

•

Lead

• • • **Lead producers** report that demand for lead continues high but that all consumers are able to obtain their full requirements. There is no surplus tonnage after shipment to customers which would be likely to affect the market structure. Lead producers are absorbing the freight rate increase and there is no change in the delivered New York price.

Nonferrous Metals Prices

Cents per pound

	Oct. 15	Oct. 16	Oct. 17	Oct. 18	Oct. 20	Oct. 21
Copper, electro, Conn.	21.50	21.50	21.50	21.50	21.50	21.50
Copper, Lake, Conn.	21.625	21.625	21.625	21.625	21.625	21.625
Tin, Straits, New York	80.00	80.00	80.00	80.00	80.00	80.00
Zinc, East St. Louis	10.50	10.50	10.50	10.50	10.50	10.50
Lead, St. Louis	14.80	14.80	14.80	14.80	14.80	14.80

Antimony

• • • **The recent** reported weakness in the antimony market is no longer apparent according to producers, due largely to the removal of the threat of the 1000 tons of Chinese metal. The application of the freight rate increase brings the price delivered New York to 36.030¢ per lb.

•

Jap Lead Scrap Awards

Washington

• • • **Successful bidders** on RFC imports of 315 short tons of Japanese bulk lead scrap and 824 short tons of ingot lead scrap were Aetna Smelting & Refining Co., American Smelting & Refining Co., Irving Metal Co., Inc., Metro Smelting & Refining Co., Schuylkill Products Co., Inc., and Standard Rolling Mills, Inc. Average price received by U. S. Commercial Co. for bulk scrap was 13.036¢ per lb, and average price for ingot scrap was 13.5022¢ per lb, f.o.b. cars, Howland Hook, Staten Island.

An additional 880 tons of Japanese lead scrap will be sold to successful bidders next month by the U. S. Commercial Co. to be sold in 23 lots on a sealed bid basis for delivery f.o.b. cars, Staten Island, N. Y. Prospective bidders may inspect the material from Oct. 27 through Oct. 29 upon making written request of the U. S. Commercial Co. prior to Oct. 23.

•

Foundries Lay Off Men

Boston

• • • **Nonferrous foundries** in western Massachusetts and Connecticut have laid off patternmakers and other workers due to a drop in orders for bronze, aluminum and magnesium from aircraft manufacturers who are reluctant to start the new year over-stocked with inventories.

Spotty business in the aircraft field is said to be temporary. Manufacturers look for replacements for military and commercial planes before long.

NONFERROUS METALS PRICES

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, f.o.b. shipping point, freight allowed	15.00
Aluminum pig, f.o.b. shipping point	14.00
Antimony, American Laredo Tex.	33.00
Beryllium copper, 3.75-4.25% Be; dollars per lb contained Be	$17.00
Beryllium aluminum 5% Be, dollars per lb contained Be	$35.50
Cadmium, del'd	$1.75
Cobalt, 97-99% (per lb)	$1.65 to $1.72
Copper electro, Conn. Valley	21.50
Copper, lake, Conn. Valley	21.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$80 to $90
Lead, St. Louis	14.80
Lead, New York	15.00
Magnesium, 99.8+%	20.50
Magnesium, sticks, carlots	36.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$81 to $83
Nickel, electro, f.o.b. New York	37.67
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$59 to $62
Silver, New York, cents per oz.	71.375
Tin, Straits, New York	80.00
Zinc, East St. Louis	10.50
Zinc, New York	11.06
Zirconium copper, 6 pct Zr. per lb contained Zr	$8.75

Remelted Metals

Brass Ingot

(Cents per lb, in carloads)

85-5-5-5 ingot	
No 115	17.50-18.00
No. 120	17.00-17.50
No. 123	16.50-17.00
80-10-10 ingot	
No. 305	21.50-22.00
No. 215	19.50-20.00
88-10-2 ingot	
No. 210	27.25-27.75
No. 215	25.75-26.25
No. 245	19.75-20.25
Yellow ingot	
No. 405	13.75-14.50
Manganese Bronze	
No. 421	15.75-16.50

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys:	
0.30 copper, max.	15.75
0.60 copper, max.	15.50
Piston alloys (No. 122 type)	14.00 to 14.50
No. 12 alum. (No. 2 grade)	13.75
108 alloy	14.00
195 alloy	14.75
AXS-679	14.25

Steel deoxidizing aluminum, notch-bar, granulated or shot

Grade 1—95 pct-97½ pct	14.50
Grade 2—92 pct-95 pct	12.75
Grade 3—90 pct-92 pct	12.00-12.25
Grade 4—85 pct-90 pct	11.50-11.75

Electroplating Supplies

Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	37⅝
Electrodeposited	32.34
Rolled, oval, straight, delivered	32.59
Brass, 80-20, frt allowed	
Cast, oval, 15 in. or longer	33⅜
Zinc, Cast, 99.99	18¾
Nickel, 99 pct plus, frt allowed	
cast	51
Rolled, depolarized	52
Silver 999 fine	
Rolled, 1000 oz. lots, per troy oz.	67¼

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	43.00
Copper sulphate, 99.5, crystals, bbls	11.50
Nickel salts, single, 425 lb bbls, frt allowed	14.50
Silver cyanide, 100 oz. lots, per oz.	54.00
Sodium cyanide, 96 pct, domestic, 200 lb drums	15.00
Zinc cyanide, 100 lb drums	34.00
Zinc, sulphate, 89 pct, crystals, bbls, frt allowed	7.75

Mill Products

Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Drawn tubing: 2 to 3 in. OD by 0.065 in. wall; 3S, 43.5¢; 52S-O, 67¢; 24S-T, 71¢; base, 30,000 lb.

Plate: ¼ in. and heavier: 2S, 3S, 21.2¢; 52S, 24.2¢; 61S, 23.8¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 30.5¢; base, 30,000 lb.

Flat Sheet: 0.136-in. thickness: 2S, 3S, 23.7¢; 52S, 27.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 32.7¢; base, 30,000 lb.

Extruded Solid Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 3S, 26¢; 14S, 32.5¢; 24S, 35¢; 53S, 61S, 28¢; 63S, 27¢; 75S 45.5¢; base, 30,000 lb.

Wire, Rod and Bar: screw machine stock, rounds, 17S-T, ¼ in., 29.5¢; ½ in., 37.5¢; 1 in., 26¢; 2 in., 24.5¢; hexagons, ¼ in., 35.5¢; ½ in., 30¢; 1 in., 2 in., 27¢; base, 5000 lb. *Rod:* 2S, 3S, 1¼ to 2½ in. diam. rolled, 23¢; cold-finished, 23.5¢ base, 30,000 lb. *Round Wire:* drawn, coiled, B & S gage 17-18; 2S, 3S, 33.5¢; 56S, 39.5¢; 10,000 lb base. B & S gage 00-1: 2S, 3S, 21¢; 56S, 30.5¢. B & S 15-16; 2S, 3S, 32.5¢; 56S, 38¢; base, 30,000 lb.

Magnesium

(Cents per lb f.o.b. mill. Base quantity 30,000 lb.)

Sheet and Plate: Ma. FSa. ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 14, 69¢-74¢; 16, 79¢-81¢; 18, 87¢-89¢; 22, $1.25-$1.31; 24, $1.71-$1.75.

Round Rod: M, diam, in., ¼ to ⅜. 47¢; ½ to ¾, 45¢ 1¼ to 2½, 43.5¢; 3½ to 5, 42.5¢. Other alloys higher.

Square, Hexagonal Bar: M, size across flats, in., ¼ to ⅜, 52.5¢; ½ to ¾, 47.5¢; 1¼ to 2½, 45¢; 3½ to 5, 44¢. Other alloys higher.

Solid Shapes, Rectangles: M, form factors, 1 to 4, 46¢; 11 to 13, 49¢; 20 to 22, 51.5¢; 29 to 31, 59.5¢; 38 to 40, 75.5¢; 47 to 49, 98¢. Other alloys higher.

Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.21; 5/16 to ⅜, $1.12; ⅜ to 7/16, 97¢; 0.058 to 0.064, 7/16 to ½, 89¢; ½ to ⅝, 81¢; 0.065 to 0.082, ⅝ to ¾, 76¢; ¾ to 1, 72¢; 0.083 to 0.108, 1 to 2, 68¢; 0.165 to 0.219, 2 to 3, 59¢; 3 to 4, 57¢. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	54	43
No. 35 sheets	..	41
Strip, cold-rolled	60	44
Rod		
Hot-rolled	50	39
Cold-drawn	55	44
Angles, hot-rolled	50	39
Plates	52	41
Seamless tubes	83	71
Shot and blocks	..	31

Zinc

(Cents per lb, f.o.b. mill)

Sheet, l.c.l.	15.50
Ribbon, ton lots	14.50
Plates	
Small	13.50
Large, over 12 in.	14.50

Copper, Brass, Bronze

(Cents per pound, f.o.b. mill effective June 11)

	Extruded Shapes	Rods	Sheets
Copper	33.53	....	33.68
Copper, hot-rolled	....	30.03	....
Copper, drawn	....	31.03	....
Low brass	34.04*	31.07	31.38
Yellow brass	32.39*	29.32	29.63
Red brass	34.65*	31.68	31.99
Naval brass	29.56	28.31	34.25
Leaded brass	27.98	24.39	30.13
Commercial bronze	35.52*	32.80	33.11
Manganese bronze	33.14	31.64	37.75
Phosphor bronze, 5 pct.	53.25*	52.25	52.00
Muntz metal	29.17	27.92	32.36
Everdur, Herculoy, Olympic, etc.	37.07	35.57	38.44
Nickel silver, 5 pct.	41.20	40.28	38.67
Architectural bronze	27.94	....	....

*Seamless tubing.

Scrap Metals

(Dealers' buying prices, f.o.b. New York in cents per pound.)

Brass Mill Scrap

(Lots of less than 15,000 lb.)

Cartridge brass turnings	14½
Loose yellow brass trimmings	15¼

Copper and Brass

No. 1 heavy copper and wire	15½—16
No. 2 heavy copper and wire	14½—15
Light copper	13—13½
Auto radiators (unsweated)	8—8½
No. 1 composition	10½—11
No. 1 composition turnings	10—10½
Clean red car boxes	9—9½
Cocks and faucets	8½—9
Mixed heavy yellow brass	6¼—6¾
Old rolled brass	7—7¼
Brass pipe	8—8½
New soft brass clippings	11—11½
Brass rod ends	8½—9
No. 1 brass rod turnings	8—8½

Aluminum

Alum. pistons free of struts	3½—4
Aluminum crankcases	5½—6
2S aluminum clippings	8—8½
Old sheet & utensils	5½—6
Mixed borings and turnings	—2
Misc. cast aluminum	5—5½
Dural clips (24S)	4½—5

Zinc

New zinc clippings	5½—6
Old zinc	4¼—4½
Zinc routings	2½—3
Old die cast scrap	2½—3

Nickel and Monel

Pure nickel clippings	15½—17½
Clean nickel turnings	14—15
Nickel anodes	16—17
Nickel rod ends	16—17
New Monel clippings	12—13
Clean Monel turnings	7—8
Old sheet Monel	10—10½
Old Monel castings	7½—8
Inconel clippings	8—8½
Nickel silver clippings, mixed	7½—8
Nickel silver turnings, mixed	5½—6

Lead

Soft scrap lead	10—10½
Battery plates (dry)	5—5½

Magnesium Alloys

Segregated solids	6½—7
Castings	4½—5½

Miscellaneous

Block tin	63—65
No. 1 pewter	48—50
No. 1 auto babbitt	38—40
Mixed common babbitt	11½—12
Solder joints	13—13½
Siphon tops	38—39
Small foundry type	13—13½
Monotype	12—12½
Lino and stereotype	11½—12
Electrotype	9½—10
New type shell cuttings	11—11½
Clean hand picked type shells	4½—5
Lino and stereo dross	5—5½
Electro dross	3—3¼

Lead Products

(Cents per lb)

F.o.b. shipping point freight collect Freight equalized with nearest free delivery point.

Full lead sheets	18.25
Cut lead sheets	18.75
Lead pipe, manufacturing point	17.50
Lead traps and bends	List +42%
Combination lead and iron bends and ferrules, also combination lead and iron ferrules	List +42%
Lead wool	19.50

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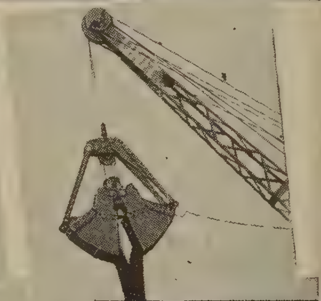
UNIT tops them all for handling mixed iron . . . compressed bundles from baler to car . . . or loose scrap from bins to car. Fast on the lift . . . fast on the swing. Loads trucks and cars, in your own yard or at customer's plant. Ideal also for breaking up metals with skull cracker ball. A timesaver and profitmaker for scrap yards.

5 to 10 TON CAPACITY

GRAPPLE



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Scrap Prices Again Hit Record High

New York

• • • **The scrap market** moved sharply upward this week with substantial increases in all of the major consuming areas. The present scrap trend is even more hectic than that in August when a new high was reached. THE IRON AGE heavy melting steel composite price this week hit a new historical high of $41.83.

Today's conditions are more active and inflationary than in June 1917, when prices on scrap reached a new high up to that time. Only this year in August were those frantic scenes repeated. Now they have been surpassed. Also, in 1917 the high price levels were not sustained for so long a period.

Conditions are now precarious for buyers because of the serious long term shortage of scrap. The advent of the winter will also pose a short term seasonal problem. Mills who have stayed out of the market in recent weeks, hoping for more favorable terms are now faced with the discouraging delivery problems accompanying cold weather.

The sharp upward movement in prices on the east coast, which according to some observers dictated the price moves in principal midwestern markets, continued this week. The New York and Boston markets were marked by extreme fluctuations this week, and buying by distant mills continued strong.

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PITTSBURGH — Based on consumer purchases, the market was $2 stronger here this week, with the heavy melting grades quotable at $42 to $42.50. Latest rail awards pushed railroad heavy melting up $1.50 on the top, to $42.50 to $43.50. The rail specialties were up by the same amount to $50 to $51. Cast rose sharply to $45 to $46. The recent surge of price activity in the eastern markets caused considerable concern here and to avoid losing too much material a substantial boost was said to have been required.

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CHICAGO — The new price posted last week by at least one local mill was a little lower than many had expected. Mills out of the immediate district have been paying this price for at least a week. The new price comes at a time when orders on the brokers and dealers books were at an all-time low. The raise in openhearth scrap bridged the wide gap that has existed for weeks between these items and that of No. 1 railroad heavy melting. Railroad lists again closed at higher prices and users of cast iron scrap report that such material is in very short supply.

CLEVELAND — Major scrap consumers, in a long awaited move, stepped in a hot scrap market last week and began handing out orders for some representative tonnages. At the moment, the undertone of the market is such that quoted prices may mean very little, and in fact, it may require a week or longer before any price stability is possible. A variety of prices are being paid for identical grades at the present, and all signs point to the inescapable conclusion that this may be the wildest scrap market of them all.

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BOSTON — Yards are becoming hold-for-higher-prices minded. Consumers are not buying in any volume. In the meantime brokers are bidding higher prices. For railroad steel $35 to $36 has been offered; for No. 2 steel $34.50. An eastern Pennsylvania mill has bought blast furnace turnings and mixed borings and turnings at $28.50 and $28, respectively. Foundries reentering the market find yard stocks of cast mostly frozen. For chemical borings $30 is talked, but no sales are reported.

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PHILADELPHIA — Heavy melting grades sold $2 higher last week with one major factor still out of the market. Dealers, expecting still higher prices, are not rushing in to sell scrap. Higher prices have also been paid for cast and low phos grades but there is no increase in turnings. According to market observers, recent price increases in warm weather forecast still higher prices in cold weather. Reports indicate that shipments on old orders are fair.

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NEW YORK—The market broke out this week in another upward spiral with No. 1 steel being quoted at $37.00. This was the fourth consecutive week that the New York No. 1 price has increased. The flunctuating market conditions have resulted in scrap being very hard to obtain at present quotations. In the face of rising prices, mill demand is intensified.

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DETROIT — In response to pressures originating in other buying areas the Detroit price of scrap is up $2.50 this week as brokers sought to cover against previous commitments. While large mill buyers in this area are continuing to resist the new prices scrap sources here agreed that new orders would be at the higher prices. Meanwhile, reports indicate that the undertone of market for cast iron grades is strong and further price advances were predicted as outside buyers were said to be taking away substantial tonnages from the Detroit area.

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BUFFALO — Openhearth scrap was still quoted at $38 this week, but advancing markets elsewhere gave rise to speculation that local mills might put out new orders at higher prices before the end of the month to stop raiding in nearby sections by Pittsburgh and the Valley. Some other grades turned upward, with cast climbing $2, turnings $1.50 and low phos plate 50¢ a ton. A Lockport consumer was paying $45 delivered for low phos and Niagara Falls was the principal outlet for short shovelings at $35 delivered. Approximately 7,000 tons of openhearth scrap was enroute here in the barge canal from New York and 3,000 tons of borings arrived from Detroit by lake last Friday.

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CINCINNATI—The pressure on the existing price levels is great, but last week's quotations were still maintained early in the week. Much of the scrap moving here is now earmarked, and the trend in this direction, even among small scrap generating firms, is definitely a growing one.

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BIRMINGHAM — Brokers here are covering $35 orders for heavy melting steel at prices ranging from $36.50 to $37.50. This action was made necessary by the strengthening of markets in other districts and an expected substantial increase for this area. No. 1 heavy melting steel is quotable at a $37.50 top this week. Prices for blast furnace and foundry grades remain firm but unchanged. Movement generally has slowed and inventories on dealer's yards are very small.

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TORONTO—Scrap iron and steel offerings are gaining in volume, but receipts from domestic sources, as a whole, continue well below consumer requirements. Recent price advances for steel scrap have not resulted in any brisk search for materials in the rural districts, and farm communities are still carrying large quantities that could be made available for the market if gathered in. Local dealers state that very few collectors are out, and most of those formerly in this business find it more profitable to take other jobs that are so plentiful in this country. Industrial plants, however, are providing their regular quotas of scrap, but here again, offerings are below normal due to the fact that shortage of steel has forced curtailed plant operations. All grades of steel scrap are in strong demand at ceiling prices. Machinery cast has a ready market for all available supplies, and there is brisk bidding by dealers for fresh stocks, while consumers' buying prices continue from $38 to $40 per gross ton delivered.

IRON AND STEEL SCRAP PRICES

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.00 to $42.50
RR. hvy. melting	42.50 to 43.50
No. 2 hvy. melting	42.00 to 42.50
RR. scrap rails	47.50 to 48.50
Rails 2 ft. and under	50.00 to 51.00
No. 1 comp'd bundles	42.00 to 42.50
Hand bdld. new shts.	42.00 to 42.50
Hvy. axle turn.	41.50 to 42.00
Hvy. steel forge turn.	41.50 to 42.00
Mach. shop turn.	34.50 to 35.00
Shoveling turn.	36.00 to 36.50
Mixed bor. and turn.	34.50 to 35.00
Cast iron borings	35.00 to 35.50
No. 1 cupola cast.	45.00 to 46.00
Hvy. breakable cast.	38.50 to 39.00
Malleable	55.00 to 56.00
RR. knuck. and coup.	50.00 to 51.00
RR. coil springs	50.00 to 51.00
RR. leaf springs	50.00 to 51.00
Rolled steel wheels	50.00 to 51.00
Low phos.	45.00 to 46.00

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$41.50 to $42.00
No. 2 hvy. melting	41.50 to 42.00
No. 1 bundles	41.50 to 42.00
No. 2 dealers' bundles	41.50 to 42.00
Bundled mach. shop turn.	41.50 to 42.00
Galv. bundles	39.50 to 40.00
Mach. shop turn.	36.50 to 37.00
Short shov. turn.	38.50 to 39.00
Cast iron borings	37.50 to 38.00
Mix. borings & turn.	36.50 to 37.00
Low phos, hvy. forge	46.00 to 47.00
Low phos, plates	44.00 to 44.50
No. 1 RR. hvy. melt.	45.50 to 46.50
Rerolling rails	55.50 to 56.50
Miscellaneous rails	49.50 to 50.50
Angles & splice bars	50.00 to 50.50
Locomotive tires, cut	48.00 to 48.50
Cut bolster & side frames	48.00 to 48.50
Standard stl. car axles	55.50 to 56.00
No. 3 steel wheels	47.50 to 48.00
Couplers & knuckles	48.00 to 48.50
Rails 2 ft. and under	55.00 to 55.50
Malleable	64.00 to 65.00
No. 1 mach. cast.	52.00 to 53.00
No. 1 agricul. cast.	49.00 to 50.00
Hvy. breakable cast.	41.50 to 42.00
RR. grate bars	45.50 to 46.00
Cast iron brake shoes	46.00 to 46.50
Cast iron carwheels	45.00 to 45.50

CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	39.00 to 40.00
No. 1 bundles	39.00 to 40.00
No. 2 bundles	39.00 to 40.00
Mach. shop turn.	29.50 to 30.00
Shoveling turn.	31.50 to 32.00
Cast iron borings	29.50 to 30.00
Mixed bor. & turn.	29.00 to 30.00
Low phos. plate	40.00 to 41.00
No. 1 cupola cast.	45.00 to 46.00
Hvy. breakable cast.	36.00 to 37.00
Scrap rails	40.00 to 41.00

BOSTON

Dealers' buying prices per gross ton, f.o.b. cars:

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	33.00 to 34.50
Nos. 1 and 2 bundles	33.00 to 34.00
Busheling	33.00 to 34.00
Shoveling turn.	29.00 to 30.00
Machine shop turn.	28.00 to 28.50
Mixed bor. & turn.	28.00 to 28.50
Cl'n cast. chem. bor.	28.00 to 29.00
No. 1 machinery cast.	40.00 to 42.00
No. 2 machinery cast.	39.00 to 40.00
Heavy breakable cast	38.00 to 39.00
Stove plate	37.00 to 39.00

DETROIT

Per gross ton, brokers' buying prices, f.o.b. cars:

No. 1 hvy. melting	$36.75 to $37.75
No. 2 hvy. melting	36.75 to 37.75
No. 1 bundles	36.75 to 37.75
New busheling	36.75 to 37.75
Flashings	36.75 to 37.75
Mach. shop turn.	29.50 to 30.50
Shoveling turn.	30.50 to 31.50
Cast iron borings	30.50 to 31.50
Mixed bor. & turn.	30.50 to 31.50
Low phos. plate	39.75 to 40.75
No. 1 cupola cast	44.00 to 45.00
Hvy. breakable cast	34.00 to 35.00
Stove plate	33.00 to 35.00
Automotive cast.	44.00 to 45.00

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	41.00 to 42.00
No. 1 bundles	41.00 to 42.00
No. 2 bundles	41.00 to 42.00
Mach. shop turn.	32.00 to 33.00
Shoveling turn.	32.00 to 33.00
Mixed bor. & turn.	32.00 to 33.00
Clean cast chemical bor.	35.50 to 37.00
No. 1 machinery cast.	51.00 to 52.00
No. 1 mixed yard cast.	48.00 to 49.00
Hvy. breakable cast.	47.00 to 48.00
Clean auto cast.	50.00 to 51.00
Hvy. axle forge turn.	41.00 to 42.00
Low phos. plate	45.50 to 46.50
Low phos. punchings	45.50 to 46.50
Low phos. bundles	42.50 to 43.50
RR. steel wheels	48.00 to 49.00
RR. coil springs	48.00 to 49.00
RR. malleable	58.00 to 60.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	40.00 to 41.00
Bundled sheets	40.00 to 41.00
Mach. shop turn.	26.00 to 27.00
Locomotive tires, uncut	44.00 to 45.00
Mis. std. sec. rails	45.00 to 46.00
Rerolling rails	51.00 to 52.00
Steel angle bars	46.00 to 47.00
Rails 3 ft. and under	47.00 to 48.00
RR. steel springs	46.00 to 47.00
Steel car axles	46.00 to 47.00
Grate bars	39.00 to 40.00
Brake shoes	41.00 to 42.00
Malleable	59.00 to 61.00
Cast iron car wheels	44.00 to 45.00
No. 1 machinery cast.	44.00 to 45.00
Hvy. breakable cast.	38.00 to 39.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$36.50 to $37.50
No. 2 hvy. melting	36.50 to 37.50
No. 2 bundles	36.50 to 37.50
No. 1 busheling	36.50 to 37.50
Long turnings	23.00 to 24.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	24.00 to 25.00
Bar crops and plate	38.00 to 38.50
Structural and plate	38.00 to 38.50
No. 1 cupola cast.	44.00 to 45.00
Stove plate	42.00 to 42.50
No. 1 RR. hvy. melt.	36.00 to 37.00
Steel axles	38.00 to 39.00
Scrap rails	37 50 to 38.00
Rerolling rails	41.00 to 42.00
Angles & splice bars	40.00 to 41.00
Rails 3 ft. & under	40.00 to 41.00
Cast iron carwheels	35.00 to 36.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.50 to $43.00
No. 2 hvy. melting	42.50 to 43.00
Mach. shop turn.	36.50 to 37.00
Short shov. turn.	38.50 to 39.00
Cast iron borings	34.50 to 35.00
Low phos	46.00 to 46.50

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$37.00
No. 2 hvy. melting	37.00
No. 2 bundles	37.00
Comp. galv. bundles	$33.00 to 34.00
Mach. shop turn.	28.50 to 29.50
Mixed bor. & turn.	28.50 to 29.50
Shoveling turn.	29.50 to 30.50
No. 1 cupola cast.	43.50 to 44.00
Hvy. breakable cast.	43.50 to 44.00
Charging box cast.	43.50 to 44.00
Stove plate	43.50 to 44.00
Clean auto cast.	43.50 to 44.00
Unstrip. motor blks.	40.50 to 41.50
Cl'n chem. cast bor.	28.50 to 29.50

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 bundles	37.00 to 38.00
No. 2 bundles	37.00 to 38.00
No. 1 busheling	37.00 to 38.00
Mach. shop turn.	30.50 to 31.50
Shoveling turn.	32.50 to 33.50
Cast iron borings	30.50 to 31.50
Mixed bor. & turn.	30.50 to 31.50
No. 1 cupola cast	42.00 to 44.00
Charging box cast.	38.00 to 40.00
Stove plate	41.00 to 42.00
Clean auto cast.	42.00 to 44.00
RR. Malleable	50.00 to 55.00
Small indl. malleable	39.00 to 41.00
Low phos. plate	43.00 to 44.00
Scrap rails	41.00 to 42.00
Rails 3 ft. & under	45.00 to 46.00
RR. steel wheels	46.00 to 48.00
Cast iron carwheels	46.00 to 48.00
RR. coil & leaf spgs.	46.00 to 48.00
RR. knuckles & coup.	46.00 to 48.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.00 to $42.50
No. 2 hvy. melting	42.00 to 42.50
No. 1 bundles	42.00 to 42.50
No. 2 bundles	42.00 to 42.50
No. 1 busheling	42.00 to 42.50
Drop forge flashings	42.00 to 42.50
Mach. shop turn.	36.00 to 36.50
Shoveling turn.	38.00 to 38.50
Steel axle turn.	42.00 to 42.50
Cast iron borings	34.00 to 34.50
Mixed bor. & turn.	34.00 to 34.50
Low phos.	43.00 to 43.50
No. 1 machinery cast.	47.00 to 47.50
Malleable	55.00 to 60.00
RR. Cast.	47.00 to 47.50
Railroad grate bars	42.00 to 44.00
Stove plate	42.00 to 44.00
RR. hvy. melting	40.50 to 41.00
Rails 3 ft. & under	47.00 to 48.00
Rails 18 in. & under	48.00 to 49.00

SAN FRANCISCO

Per gross ton f.o.b. shipping point

No. 1 hvy. melting	$22.00
No. 2 hvy. melting	22.00
No. 2 bales	22.00

Per gross ton delivered to consumer

No. 3 bales	$16.50
Mach. shop turn.	13.00
Elec. furn. 1 ft. und.	26.00
No. 1 cupola cast.	$32.00 to 33.00
RR. hvy. melting	23.00

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	$22.50
No. 2 hvy. melting	22.50
No. 1 bales	22.50
No. 2 bales	22.50
No. 3 bales	16.00
Mach. shop turn.	14.50
No. 1 cupola cast.	$32.00 to 33.00
RR. hvy. melting	23.00

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. 2 hvy, melt.	$22.00 to $24.00
Elec. furn. 1 ft. and und.	27.00 to 28.50
No. 1 cupola cast.	30.00
RR. hvy. melting	23.00 to 25.00

HAMILTON, ONT.

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point

Heavy melting	$22.00*
No. 1 bundles	22.00*
No. 2 bundles	21.50*
Mechanical bundles	20.00*
Mixed steel scrap	19.00*
Mixed borings and turnings	17.00*
Rails, remelting	23.00*
Rails, rerolling	26.00*
Bushelings	17.00*
Bushelings, new fact., prep'd	21.00*
Bushelings, new fact., unprep'd	16.00*
Short steel turnings	17.00*
No. 1 cast.	36.00 to 40.00

*Ceiling Price.

Comparison of Prices . .

Flat-Rolled Steel: (cents per pound)	Oct. 21, 1947	Oct. 14, 1947	Sept. 23, 1947	Oct. 22, 1946
Hot-rolled sheets	2.80	2.80	2.80	2.425
Cold-rolled sheets	3.55	3.55	3.55	3.275
Galvanized sheets (10 ga.)	3.95	3.95	3.95	4.05*
Hot-rolled strip	2.80	2.80	2.80	2.45
Cold-rolled strip	3.55	3.55	3.55	3.05
Plates	2.95	2.95	2.95	2.50
Plates wrought iron	6.85	6.85	6.85	4.112
Stain's c-r strip (No. 302)	30.30	30.30	30.30	30.30
*24 gage				
Tin and Terneplate: (dollars per base box)				
Tinplate, standard cokes	$5.75	$5.75	$5.75	$5.00
Tinplate, electro (0.50 lb)	5.05	5.05	5.05	4.50
Special coated mfg. ternes	4.90	4.90	4.90	4.30
Bars and Shapes: (cents per pound)				
Merchant bars	2.90	2.90	2.90	2.50
Cold-finished bars	3.55	3.55	3.55	3.10
Alloy bars	3.30	3.30	3.30	2.92
Structural shapes	2.80	2.80	2.80	2.35
Stainless bars (No. 302)	26.00	26.00	26.00	25.97
Wrought iron bars	7.15	7.15	7.15	4.76
Wire and Wire Products: (cents per pound)				
Bright wire	3.55	3.55	3.55	3.05
Wire nails	4.25	4.25	4.25	3.75
Rails: (dollars per 100 lb)				
Heavy rails	$2.75	$2.75	$2.75	$43.39*
Light rails	3.10	3.10	3.10	49.18*
*per net ton				
Semifinished Steel: (dollars per gross ton)				
Rerolling billets	$45.00	$45.00	$45.00	$39.00
Sheet bars	66.00	66.00	66.00	38.00
Slabs, rerolling	45.00	45.00	45.00	39.00
Forging Billets	55.00	55.00	55.00	47.00
Alloy blooms, billets, slabs	66.00	66.00	66.00	58.43
Wire Rods and Skelp: (cents per pound)				
Wire rods	2.80	2.80	2.80	2.30
Skelp	2.60	2.60	2.60	2.05

Advances over past week in Heavy Type, declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.

Pig Iron: (per gross ton)	Oct. 21, 1947	Oct. 14, 1947	Sept. 23, 1947	Oct. 22, 1946
No. 2, foundry, Phila.	$41.36	$41.36	$41.22	$30.43
No. 2, Valley furnace	36.50	36.50	36.50	28.50
No. 2, Southern Cin'ti	40.24	40.24	39.75	27.80
No. 2, Birmingham	34.88	34.88	34.88	24.88
No. 2, foundry, Chicago†	36.00	36.00	36.00	28.50
Basic del'd Philadelphia	40.86	40.86	40.72	29.93
Basic, Valley furnace	36.00	36.00	36.00	28.00
Malleable, Chicago†	36.50	36.50	36.50	28.50
Malleable, Valley	36.50	36.50	36.50	28.50
Charcoal, Chicago	49.49	49.49	49.49	42.34
Ferromanganese‡	135.00	135.00	135.00	135.00

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† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ For carlots at seaboard.

Scrap: (per gross ton)	Oct. 21, 1947	Oct. 14, 1947	Sept. 23, 1947	Oct. 22, 1946
Heavy melt'g steel, P'gh	$42.25	$40.25	$37.75	$20.00
Heavy melt'g steel, Phila.	41.50	39.50	36.75	18.75
Heavy melt'g steel, Ch'go	41.75	38.75	38.75	18.75
No. 1, hy. comp. sheet. Det.	37.25	34.50	34.50	17.32
Low phos. Youngs'n	46.25	46.25	44.50	22.50
No. 1, cast, Pittsburgh	45.50	44.25	43.00	25.00
No. 1, cast, Philadelphia	51.50	49.50	47.50	25.00
No. 1, cast, Chicago	52.50	50.00	49.50	25.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$12.50	$12.00	$12.00	$8.75
Foundry coke, prompt	14.00	13.75	13.75	8.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro., Conn.	21.50	21.50	21.50	14.375
Copper, Lake, Conn.	21.625	21.625	21.625	14.375
Tin, Straits, New York	80.00	80.00	80.00	52.00
Zinc, East St. Louis	10.50	10.50	10.50	9.25
Lead, St. Louis	14.80	14.80	14.80	8.10
Aluminum, virgin	15.00	15.00	15.00	15.00
Nickel, electrolytic	37.67	37.67	37.67	35.00
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	33.00	33.00	33.00	14.50

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL	PIG IRON	SCRAP STEEL
Oct. 21, 1947	3.19141¢ per lb.	$36.96 per gross ton	$41.83 per gross ton
One week ago	3.19141¢ per lb.	$36.96 per gross ton	$39.50 per gross ton
One month ago	3.19141¢ per lb.	$36.93 per gross ton	$37.75 per gross ton
One year ago	2.73011¢ per lb.	$28.13 per gross ton	$19.17 per gross ton

	FINISHED STEEL HIGH	FINISHED STEEL LOW	PIG IRON HIGH	PIG IRON LOW	SCRAP STEEL HIGH	SCRAP STEEL LOW
1947	3.19141¢ Aug. 5	2.87118¢ Jan. 7	$37.35 Aug. 19	$30.14 Jan. 7	$41.67 Aug. 5	$29.50 May 20
1946	2.83599¢ Dec. 31	2.54490¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.44104¢ Oct. 2	2.38444¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.29176¢	2.29176¢	23.61	23.61	$19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec. 9
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

—Iron and Steel Prices . . .

Steel prices shown here are f.o.b. basing points in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. Industry practice has discontinued arbitrary f.o.b. prices at Gulf and Pacific Ports. Space limitations prevent quotation of delivered prices at major ports. (1) Commercial quality sheet grade; primes, 25c above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 20,000 lb to 89,999 lb. (9) Carload lot in manufacturing trade. (10) Delivered Los Angeles only. (11) Boxed. (12) Produced to dimensional tolerances in AISI Manual Sec. 6. (13) Delivered San Francisco only: Includes 3 pct freight tax. (14) Delivered Kaiser Co. prices: includes 3 pct freight tax. (15) to 0.035 to 0.075 in. thick by ¾ to 3½ in. wide. (16) Spot market as high as $92 gross ton. (17) Delivered Los Angeles: add ½c per 100 lb for San Francisco. (18) Slab prices subject to negotiation in most cases. Some producers charge (19) $2 more, (21) $1 more. Some producers charge (22) 0.05¢ less, (23) 0.10¢ less, (24) 0.20¢ less.

													DELIVERED TO		
Basing Points	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		San Franc'co, Los Angeles, Seattle	Detroit	New York	Philadelphia
INGOTS Carbon, rerolling					($36.00 f. o. b. mill) (Spot market as high as $80 gross ton)										
Carbon, forging	$46.00														
Alloy	$56.00									(Canton = $56.00)					
BILLETS, BLOOMS, SLABS Carbon, rerolling [18]	$45.00[19]	$45.00[19]	$45.00[19]	$47.00	$45.00[19]	$45.00[19]							$48.00[19]		
Carbon, forging billets	$55.00	$55.00	$55.00	$55.00	$55.00	$55.00							$58.00		
Alloy	$66.00	$66.00				$66.00		(Bethlehem, Massillon, Canton = $66.00)					$69.00		
SHEET BARS[16]							$66.00								
PIPE SKELP	2.60¢[21]	2.65¢					2.60¢[21]	2.60¢[21]							
WIRE RODS	2.80¢[21]	2.80¢[21]		2.80¢[21]	2.85¢		(Worcester = 2.90¢[21])					3.52¢[13]			
SHEETS Hot-rolled	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	3.175¢	(Ashland, Ky. = 2.80¢)		3.54[17]¢	2.95¢	3.12¢	3.02¢
Cold-rolled[1]	3.55¢	3.55¢	3.55¢	3.55¢		3.55¢	3.55¢		3.65¢	3.55¢			3.70¢	3.96¢	3.97¢
Galvanized (10 gage)	3.95¢[23]	3.95¢[23]	3.95¢[23]		3.95¢[23]		3.95¢	3.95¢	4.05¢	3.35¢	(Ashland = 3.95¢)	4.62¢[17]		4.27¢	4.17¢
Enameling (12 gage)	3.95¢[22]	3.95¢[22]	3.95¢[22]	3.95¢			3.95¢		4.05¢	3.95¢			4.10¢[22]	4.42¢	4.37¢
Long ternes [2] (10 gage)	4.05¢[24]	4.05¢[24]	3.85¢											4.52¢	4.47¢
STRIP Hot-rolled [3]	2.80¢	2.80¢	2.80¢	2.80¢[15]	2.80¢		2.80¢					3.60¢[17]	2.95¢	3.27¢	3.22¢
Cold-rolled [4]	3.55¢	3.65¢		3.55¢			3.55¢			(Worcester = 3.75¢)			3.70¢	4.02¢	3.97¢
Cooperage stock	3.10¢	3.10¢			3.10¢		3.10¢							3.57¢	
TINPLATE Standard cokes, base box	$5.75	$5.75	$5.75		$5.85			$5.85	$5.85		(Warren, Ohio = $5.75)			$6.217	$6.082[11]
Electro, box 0.25 lb.						Deduct 90¢ from standard coke base box price.									
Electro, box 0.50 lb.						Deduct 70¢ from standard coke base box price.									
Electro, box 0.75 lb.						Deduct 50¢ from standard coke base box price.									
BLACKPLATE, 29 gage[5]	3.90¢	3.90¢	3.90¢		4.00¢			4.00¢	4.00¢					4.32¢	4.22¢
BLACKPLATE, CANMAKING 55 lb. to 70 lb.						Deduct $1.55 from standard coke base box.									
75 lb. to 95 lb.						Deduct $1.65 from standard coke base box.									
100 lb. to 118 lb.						Deduct $1.55 from standard coke base box.									
TERNES, MFG., Special coated						Deduct 85¢ from standard coke base box price.									
BARS Carbon steel	2.90¢	2.90¢	2.90¢	2.90¢	2.90¢	2.90¢	2.90¢					3.625¢[17]	3.05¢	3.314	3.32¢
Rail steel[6]	Subject to negotiation because of fluctuating scrap prices.														
Reinforcing (billet)[7]	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢				3.325¢[17]		3.07¢	2.97¢
Reinforcing (rail)	Subject to negotiation because of fluctuating scrap prices.														
Cold-finished[8]	3.55¢	3.55¢	3.55¢	3.55¢		3.55¢							3.70¢	3.96¢	3.97¢
Alloy, hot-rolled	3.30¢	3.30¢				3.30¢	3.30¢	(Bethlehem, Massillon, Canton = 3.30¢)					3.45¢		3.45¢
Alloy, cold-drawn	4.10¢	4.10¢	4.10¢	4.10¢		4.10¢							4.25¢		
PLATE Carbon steel[12]	.95¢	2.95¢	2.95¢	2.95¢	2.95¢		2.95¢	(Coatesville = 3.15¢, Claymont = 3.15¢, Geneva, Utah = 3.10¢) 2.95¢				3.76¢[14]		3.27¢	3.17¢
Floor plates	4.20¢	4.20¢												4.67¢	4.62¢
Alloy	3.80¢	3.80¢			(Coatesville = 4.50¢)									4.27¢	4.02¢
SHAPES, Structural	2.80¢	2.80¢	2.80¢		2.80¢	2.80¢	(Geneva, Utah = 3.95¢, Bethlehem = 2.80¢)					3.43¢[10]		3.02¢	2.95¢
SPRING STEEL, C-R 0.08 to 0.40 carbon	3.55¢			3.55¢			(Worcester = 3.75¢)								
0.41 to 0.60 carbon	5.05¢			5.05¢			(Worcester = 5.25¢)								
0.61 to 0.80 carbon	5.65¢			5.65¢			(Worcester = 5.85¢)								
0.81 to 1.05 carbon	7.15¢			7.15¢			(Worcester = 7.35¢)								
1.06 to 1.35 carbon	9.45¢			9.45¢			(Worcester = 9.65¢)								
MANUFACTURERS' WIRE[9] Bright	3.55¢	3.55¢		3.55¢	3.55¢		(Worcester = 3.65¢, Duluth = 3.60¢)					4.56¢[13]		3.99¢	3.97¢
Galvanized					Add proper size extra and galvanizing extra to Bright Wire Base										
Spring (high carbon)	4.60¢	4.60¢		4.60¢	(Worcester = 4.70¢, Duluth = 4.85¢) (Trenton = 4.85¢)							5.28¢[13]		5.04¢	4.96¢
PILING, Steel sheet	3.30¢	3.30¢				3.30¢								3.71¢	3.72¢

CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

Basing Point	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila	Subject to negotiation		Subject to negotiation			
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt	Subject to negotiation		Subject to negotiation			
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	Subject to negotiation		Subject to negodiation			
Billets, P'gh, Chi, Canton, Watervliet, Syracuse, Balt	Subject to negotiation		Subject to negotiation			
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Water, Syracuse, Ft. Wayne, Titusville	23.00	22.50	17.50	17.50	21.00	25.50
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville	27.50	26.00	20.50	21.00	24.50	30.00
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet	27.50	26.00	20.50	21.00	24.50	30.00
Plates, P'gh, Middletown, Canton	31.50	29.50	23.50	24.00	28.00	33.00
Shapes, structural, P'gh, Chi	27.50	26.00	20.50	21.00	24.50	30.00
Sheets, P'gh, Chi, Middletown, Canton, Balt	39.00	37.00	29.00	31.50	35.50	39.50
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	25.50	23.50	18.50	19.00	26.00	38.00
Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton Youngstown	32.50	30 50	24.00	24.50	35.00	56.50
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila, Ft. Wayne	27.50	26.00	20.50	21.00	24.50	30.00
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton	32.46	30.30	23.80	24.34	34.62	56.26
Rod, h-r, Syracuse	27.05	25.97	20.02	20.56	24.34	29.75
Tubing, seamless, P'gh, Chi, Canton (4 to 6 in.)	72.09	72.09	.....	68.49	.....	.....

TOOL STEEL

*(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. *Also Canton, Ohio)*

W	Cr	V	Mo	Co	Base Per lb
18	4	1	—	—	82¢
18	4	1	—	5	$1.29
18	4	2	—	—	93¢
1.5	4	1.5	8	—	59¢
6	4	2	6	—	63¢

High-carbon-chromium*	47¢
Oil hardening manganese*	26¢
Special carbon*	24¢
Extra carbon*	20¢
Regular carbon*	17¢

Warehouse prices on and east of Mississippi are 2¢ per lb. higher; west of Mississippi, 4¢ higher.

ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	Per lb
Field grade	4.50¢
Armature	4.80¢
Electrical	5.30¢
Motor	6.05¢
Dynamo	6.75¢
Transformer 72	7.25¢
Transformer 65	7.95¢
Transformer 58	8.65¢
Transformer 52	9.45¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb No. 1 O.H., per 100 lb	$2.75
Angle splice bars, 100 lb	3.25
(F.o.b. basing points)	*per 100 lb*
Light rails (from billets)	$3.10
Light rails (from rail steel), f.o.b. Williamsport, Pa.	3.45
	Base per lb
Cut spikes	4.85c
Screw spikes	6.90¢
Tie plate, steel	3.05¢
Tie plates, Pittsburg, Calif.	3.20¢
Track bolts	7.00¢
Track bolts, heat treated, to rail roads	7.25¢

Basing points, light rails, Pittsburgh, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio; Weirton, W. Va.; St. Louis, Kansas City, Minnequa, Colo.; Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa.; Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa.; Richmond.

ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb coating I.C.	$7.05	$14.10

CLAD STEEL

Base prices, cents per pound

Stainless-clad	*Plate*	*Sheet*
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Coatesville, Pa.	*24.00	*22.00
Nickel-clad 10 pct, f.o.b. Coatesville, Pa.	21.50	....
Inconel-clad 10 pct, f.o.b. Coatesville	30.00	....
Monel-clad 10 pct, f.o.b. Coatesville	29.00	....
Aluminized steel Hot dip, 20 gage, f.o.b. Pittsburgh	....	9.00

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* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Base per keg	*Delivered San Francisco*
Standard & coated nails	$4.25†	$5.33
Galvanized nails‡‡	4.00†	5.08
Cut nails, carloads, Pittsburgh base	5.80*	....

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† 10¢ additional at Cleveland, 35¢ at Worcester. ‡‡ Plus $2.75 per 100 lb galvanizing extra. *Less 20¢ to jobbers.

	Base per 100 lb	
Annealed fence wire	$4.20‡	$5.21
Annealed galv. fence wire	4.65‡	5.66

‡10¢ additional at Worcester.

To the dealer f.o.b. Pittsburgh, Chicago, Birmingham

	Base	*column*
Woven wire fence*	91	114
Fence posts, carloads	90††	...
Single loop bale ties	91	115
Galvanized barbed wire**	101	121
Twisted barbless wire	101	...

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* 15½ gage and heavier. ** On 80-rod spools in carload quantities. ††Pittsburgh, Duluth.

HIGH STRENGTH, LOW ALLOY STEELS

base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dynalloy	Hi Steel	Mayari R	Otiscoloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55
Sheets									
Hot-rolled	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30
Cold-rolled	5.30	5.30	5.30	....	5.30	5.30	5.30	5.30	5.30
Galvanized	....	5.85	....	....	....	6.00	....	....	....
Strip									
Hot-rolled	4.30	4.30	4.30	....	4.30	4.30	4.30	4.30	4.30
Cold-rolled	....	....	5.30	....	....	5.30	5.30	5.30	5.30†
Shapes	....	4.30	....	....	4.30	4.30	4.30	4.30	.....
Beams	....	4.30	....	....	....	4.30	....	....	....
Bars									
Hot-rolled	4.45	4.45	4.45	....	....	4.45	4.45	4.45	4.45
Cold-rolled	....	....	....	....	....	....	....	....	....
Bar shapes	....	4.45	....	....	4.45	4.45	4.45	4.45	....

† Pittsburgh, add 0.10¢ at Chicago and Gary.

PIPE AND TUBING

Base discounts. f.o.b. Pittsburgh and Lorain, steel buttweld and seamless. Others f.o.b. Pittsburgh only
Base price, $200.00 per net ton

Standard, threaded & coupled

Steel, buttweld	Black	Galv,
½-in.	50½	34½
¾-in.	53½	38½
1-in.	56	41½
1¼-in.	56½	42
1½-in.	57	42½
2 in.	57½	43
2½ and 3-in,	58	43½
Wrought Iron, buttweld		
½-in.	+ 7	+29
¾-in.	2½	+19
1 and 1¼-in.	8	+11
1½-in.	13½	+ 7½
2-in.	14	+ 7
Steel, lapweld		
2-in.	49	34
2½ and 3-in.	52	37
3½ to 6-in.	54	39
Steel, seamless		
2-in.	48	33
2½ and 3-in.	51	36
3½ to 6-in.	53	38
Wrought Iron, lapweld		
2-in.	5½	+14½
2½ to 3½-in.	8	+10½
4-in.	12	+ 5
4½ to 8-in.	10	+ 6½

Extra Strong, plain ends

Steel, buttweld		
½-in.	49½	35
¾-in.	53½	39
1-in.	55½	42
1¼-in.	56	42½
1½-in.	56½	43
2-in.	57	43½
2½ and 3-in.	57½	44
Wrought Iron, buttweld		
½-in.	+ 2½	+23
¾-in.	3½	+17
1 to 2-in.	13	+ 7
Steel, lapweld		
2-in.	48	34
2½ and 3-in.	52	38
3½ to 6-in.	55½	41½
Steel, seamless		
2-in.	47	33
2½ and 3-in.	51	37
3½ to 6-in.	54½	40½
Wrought Iron, lapweld		
2-in.	8½	+11
2½ to 4-in.	17½	+ ½
4½ to 6-in.	13	+ 5

Basing discounts for standard pipe are for threads and couplings. For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. F.o.b. Gary prices are one point lower discount on all buttweld. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft, f.o.b. Pittsburgh in carload lots, cut length 4 to 24 ft, inclusive.

		Seamless		Electric Weld	
OD in in.	Gage BWG	Hot-Rolled	Cold-Drawn	Hot-Rolled	Cold-Drawn
2	13	$16.67	$19.99	$16.17	$19.39
2½	12	22.42	26.87	21.75	26.06
3	12	24.93	29.90	24.18	29.00
3½	11	31.17	37.39	30.23	36.27
4	10	38.69	46.38	37.53	44.99

CAST IRON WATER PIPE

	Per net ton
6-in. to 24-in. del'd Chicago	$85.06
6-in. to 24-in. del'd New York	83.30
6-in. to 24-in., Birmingham	74.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles for all rail shipment; rail and water shipment less	98.50

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Percent Off List
½ in. & smaller x 6 in. & shorter	45
9/16 & ⅝ in. x 6 in. & shorter	46
¾ in. & larger x 6 in. & shorter	43
All diam, longer than 6 in.	41
Lag, all diam over 6 in. long	44
Lag, all diam x 6 in. & shorter	46
Plow bolts	54

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	43
9/16 to 1 in. inclusive	42
1⅛ to 1½ in. inclusive	40
1⅝ in. and larger	35

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts	USS	SAE
7/16 in. and smaller		46
½ in. and smaller	44	..
½ in. through 1 in.		44
9/16 in. through 1 in.	43	..
1⅛ in. through 1½ in.	41	42
1⅝ in and larger	35	..

In full case lots, 15 pct additional discount. For 200 lb or more, freight allowed up to 50¢ per 100 lb. based on Cleveland, Chicago, Pittsburgh.

Stove Bolts

Packages, nuts separate	65 and 10
In bulk	75

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.

Large Rivets *(½ in. and larger)*

	Base per 100 lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$5.65
F.o.b. Lebanon, Pa.	5.80

Small Rivets *(7/16 in. and smaller)*

	Percent Off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	55

Cap and Set Screws

(In packages)	*Percent Off List*
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	53
¾ to 1 in. x 6 in., SAE 1035, heat treated	44
Set screws, cup and oval points	57
Milled studs	43
Flat head cap screws, listed sizes	16
Fillister head cap, listed sizes	37

Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.

FLUORSPAR

Metallurgical grade, f.o.b. producing plant.

Effective CaF_2 Content:	*Base price per short ton*
70% or more	$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00

LAKE SUPERIOR ORES

(51.50% *Fe, Natural Content, Delivered Lower Lake Ports*)

	Per Gross Ton
Old range, bessemer	$5.95
Old range, nonbessemer	5.80
Mesabi, bessemer	5.70
Mesabi, nonbessemer	5.55
High phosphorus	5.55

Prices quoted retroactive to Jan. 1, 1947.

METAL POWDERS

Prices in cents per pound in ton lots, f.o.b. shipping point.

Brass, minus 100 mesh	24¢ to 28½¢
Copper, electrolytic, 100 and 325 mesh	30¢ to 31½¢
Copper, reduced, 150 and 200 mesh	29¢ to 30½¢
Iron, commercial, 100, 200, 325, mesh 96 + % Fe carlots	10¢ to 17¢
Swedish sponge iron, 100 mesh, c.i.f. N. Y., carlots, ocean bags	7.4¢ to 8.5¢
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots	5¢
Iron, hydrogen reduced, 300 mesh and finer, 98 + % Fe, drum lots	63¢ to 80¢
Iron, electrolytic, unannealed, 325 mesh and coarser, 99 + % Fe	35¢ to 37¢
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe	29¢ to 32¢
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe	90¢ to $1.75
Aluminum, 100, 200 mesh, carlots	23¢ to 26¢
Antimony, 100 mesh	36.05¢
Cadmium, 100 mesh	$2.00
Chromium, 100 mesh and finer	$1.025
Lead, 100, 200, & 300 mesh	18.50¢ to 23.50¢
Manganese, minus 325 mesh and coarser	49¢
Nickel, 100 mesh	51½¢
Silicon, 100 mesh	26¢
Solder powder, 100 mesh	8½¢ plus metal
Stainless steel, 302, minus 100 mesh	75¢
Tin, 100 mesh	90¢
Tungsten metal powder, 98%-99%, any quantity, per lb	$3.05
Molybdenum powder, 99%, in 100-lb kegs, f.o.b. York, Pa., per lb.	$2.65
Under 100 lb	$2.90

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$12.00 to $13.00
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	13.50 to 14.50
Foundry, Byproduct	
Chicago, del'd	$17.10
Chicago, f.o.b.	16.10
New England, del'd	19.75
Seaboard, Kearney, N. J., f.o.b.	17.85
Philadelphia, f.o.b.	16.75
Swedeland, Pa., f.o.b.	16.75
Buffalo, del'd	18.75
Ashland, Ohio, f.o.b.	15.50
Painesville, Ohio, f.o.b.	16.60
Erie, del'd	16.75
Cleveland, del'd	17.90
Cincinnati, del'd	15.39
St. Louis, del'd	18.03
Birmingham, del'd	15.00

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

	Carloads, Per 1000
No. 1, Ohio	$64.00
First quality, Pa., Md., Ky., Mo., Ohio	70.00
First quality, New Jersey	75.00
Sec. quality, Pa., Md., Ky., Mo, Ohio	64.00
Sec. quality, New Jersey	59.00
No. 2, Ohio	56.00
Ground fire clay, net ton, bulk	10.00

Silica Brick

Pennsylvania and Birmingham	$70.00
Chicago District and Alabama	79.00
Silica cement, net ton (Eastern)	12.00
East Chicago	13.00

Chrome Brick

	Per Net Ton
Standard chemically bonded, Balt., Plymouth Meeting, Chester	$59.00

Magnesite Brick

Standard, Balt. and Chester	$81.00
Chemically bonded, Baltimore	70.00

Grain Magnesite

Domestic, f.o.b. Balt. and Chester in bulk	$44.50
Domestic, f.o.b. Chewelah, Wash., in bulk	24.00
in sacks	28.00

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk. Midwest; add 10¢; Missouri Valley; add 20¢	$11.05

WAREHOUSE PRICES

Base prices, delivered metropolitan areas, per 100 lb.

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Philadelphia	$4.44	$5.18	$5.69	$4.73	$5.28	$4.79	$4.52	$4.78	$5.48	$8.32	$8.42	$9.83	$9.93
New York	4.67	5.67[1]	6.07	4.97	5.80	5.02	4.72	4.97	5.52	8.37	8.47	9.87	9.97
Boston	4.70	5.57[12]	5.50[12]	4.70	6.71	5.05	4.77	4.92	5.57	8.57	8.67	9.92	10.02
Baltimore	4.29	....	5.54	4.70	....	4.74	4.64	4.75	5.45	....	....	....	...
Norfolk	4.75	..	..	5.15	..	5.00	5.00	5.05	5.85	....	....	....	...
Chicago	4.25	5.10	5.65	4.35	5.45	4.60	4.40	4.40	5.10	8.05	8.15	9.30	9.40
Milwaukee	4.399	5.249[1]	5.799	4.499	5.599	4.749	4.549	4.549	5.249	8.349	8.449	9.599	9.69
Cleveland	3.95	4.55	5.238	4.188	5.00	4.25†	4.311	4.10	4.95	8.308	8.408	9.30	9.40
Buffalo	4.25	5.10	5.95	4.65	5.61[5]	4.90	4.40	4.40	5.10	8.05	8.15	9.30	9.40
Detroit	4.35	5.20	5.97	4.64	5.59	4.84†	4.72	4.50	5.22	8.46	8.56	9.69	9.79
Cincinnati	4.471	5.166	5.166	4.694	....	4.903	4.744	4.703	5.403	...	....		
St. Louis	4.549	5.399[1]	5.974	4.649	5.774	4.899	4.699	4.699	5.424	8.524	8.624	9.774	9.87
Pittsburgh	4.25	5.10[1]	5.65	4.35	4.95	4.60	4.40	4.40	4.95	8.05	8.15	9.30	9.40
St. Paul	4.584[7]	5.434[1]	5.834[2]	4.684[7]	....	4.884[7]	4.734[7]	4.734[7]	4.826[6]	....	....	....	....
Omaha	5.165	....	6.565	5.265		5.515	5.315	5.315	6.015	....	....	....	....
Indianapolis	4.51	5.29	5.84	4.61	5.46	4.86	4.66	4.65	5.36	....	....	....	....
Birmingham	4.45[11]	..	5.65	4.45[11]	....	4.65[11]	4.40[11]	4.40[11]	5.93	....	....	....	....
Memphis	4.77[11]	5.79[11]	6.32	4.97[11]	....	5.12[11]	4.92[11]	4.92[11]	5.79	....	....	....	....
New Orleans	*4.98[11]	6.29[1]		5.18[11]	....	5.33[11]	*5.03[11]	*5.13[11]	6.29[6]	....	....	....	....
Houston	5.30		6.60	5.25		5.35	5.15	5.30	6.60	8.75[16]	8.55[16]	9.70[16]	9.80[1]
Los Angeles	5.65	7.35[1]	7.30	5.95	8.70[5]	5.40	5.25	5.40	7.25[14]	9.90[15]	9.60[15]	11.35[15]	11.35[1]
San Francisco	5.20[8]	6.65	6.85	5.50[8]	....	5.30	5.20	5.05	7.35[10]	....	....	....	..
Seattle	5.30[4]	7.10[3]	6.70	5.60[4]	....	5.45[4]	5.25[4]	5.45[4]	7.45[14]	....	9.75[6]	....	11.10[6]
Portland	5.30[4]	....	6.70	5.60[4]	....	5.45[4]	5.25[4]	5.55[4]	7.45[14]	....	....	....	....
Salt Lake City	6.25	....	7.50	6.75	....	6.10	6.25	6.35	7.40	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities; bars 1000 lb and over.

ALLOY BARS: 1000 to 1999 lb.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 450 to 1499 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over.

* Add 46¢ for sizes not rolled in Birmingham.

† Up to ¾ in. thick and 90 in. wide.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do not include 3 pct tax on freight.

BASING POINT PRICES

Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	37.00	37.50	38.00	38.50	.. ..
Birdsboro	40.00	40.50	41.00	41.50	45.00
Birmingham	32.88– 35.88	33.38- 36.38	.....	.....	.....
Buffalo	36.00– 37.50*	36.00– 38.00*	36.50– 38.50*	.....	.....
Chicago	35.50	36.00	36.50	37.00	.....
Cleveland	35.50– 38.25*	36.00 38.75*	36.50- 39.25*	.....	.....
Duluth	36.00	36.50	37.00	37.50	.....
Erie	35.50	36.00	36.50	37.00	.....
Everett	.. .	45.00	45.50	.....	.....
Granite City	36.50	37.00	37.00	...	.....
Neville Island	36.00	36.50	36.50	37.00	.....
Provo	37.00	37.50		.....	.....
Sharpsville	36.00	36.50	36.50	37.00	.....
Steelton	37.00	.....	.....	.....	42.00
Struthers, Ohio	36.50	....	.. ..	.....	.....
Swedeland	41.00	41.50	42.00	42.50	.....
Toledo	35.50	36.00	36.50	37.00	.....
Troy, N. Y.	37.00	37.50	38.00	38.50	42.00
Youngstown	36.00	36.50	36.50	37.00	.....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	45.50	46.00	.....	
Boston	Steelton	5.30	.. .	.....	.....	..	47.30
Brooklyn	Bethlehem	3.30	40.30	40.80	41.30	41.80	.....
Brooklyn	Birdsboro	3.85	43.85	44.35	44.85	45.35	48.85
Cincinnati	Birmingham	5.36	38.24– 41.25	38.74- 41.74	.....	.....	.....
Jersey City	Bethlehem	2.02	39.02	39.52	40.02	40.52	.....
Jersey City	Birdsboro	2.56	.. ..	....	.....	.....	47.56
Los Angeles	Provo	6.53	43.53	44.03		.. ..	.....
Mansfield	Cleveland-Toledo	2.56	38.06- 40.81*	38.56- 41.31*	39.06– 41.81*	39.56	.....
Philadelphia	Bethlehem	1.84	38.84	39.34	39.84	40.34	.....
Philadelphia	Swedeland	1.11	42.11	42.61	43.11	43.61	.....
Philadelphia	Birdsboro	1.64	41.64	42.14	42.64	43.16	46.64
Philadelphia	Steelton	2.38	39.38	.....	.....	.....	44.38
San Francisco	Provo	6.53	43.53	44.03	.....	.....	.....
Seattle	Provo	6.53	43.53	44.03	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	37.25	37.75	37.75	.....	.....

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* Republic Steel Corp. price. Basis: Average price of No. 1 hvy. mlt. steel scrap at Cleveland or Buffalo respectively as shown in last week's issue of THE IRON AGE. Price is effective until next Sunday midnight.

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—$45.50; f.o.b. Buffalo — $46.75. Add $1.25 per ton for each additional 0.50 pct Si, up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorous $44.00 per gross ton, f.o.b. Lyles, Tenn. High phosphorous charcoal pig iron is not being produced.

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockwood, Tenn.

Carload lots (bulk)	$145
Less ton lots (packed)	172.00
Delivered Pittsburgh	151.00

$1.70 for each 1% above 82% Mn; penalty, $1.70 for each 1% below 78%.

Briquets—Cents per pound of briquet, freight allowed, 66% contained Mn.

	Eastern	Central	Western
Carload, bulk	8.00	8.25	8.80
Ton lots	9.00	9.60	11.50
Less ton lots	9.40	10.00	11.90

Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Carloads	$46.00	$47.00
F.o.b Pittsburgh	50.00	51.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, f.o.b. shipping point, freight allowed, eastern zone.

96% min. mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, bulk	32
L.c.l. lots	34

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	32
Ton lots	34
Less ton lots	36

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.

	Carloads	Ton	Less
0.06% max. C. 0.06% P, 90% Mn	23.00	24.10	24.70
0.10% max. C	22.50	23.60	24.20
0.15% max. C	22.00	23.10	23.70
0.30% max. C	21.50	22.60	23.20
0.50% max. C	21.00	22.10	22.70
0.75% max. C, 7.00% max. Si	18.00	19.10	19.70

Silicomanganese

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed, 65-70% Mn, 17-20% Si, 1.5% max. C.

Carload, bulk	7.40
Ton lots	8.45
Briquet, contract basis, carlots, bulk freight allowed, per lb of briquet	7.65
Ton lots	8.65
Less ton lots	9.05

Silvery Iron (electric furnace)

Si 14.01 to 14.50%, $73.00 f.o.b. Keokuk, Iowa; $73.75 f.o.b. Niagara Falls; $70.75, f.o.b. Jackson, Ohio. Electric furnace silvery iron is not being produced at Jackson. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add 50¢ per ton for each 0.50 pct Mn over 1 pct.

Silicon Metal

Contract price, cents per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots packed.

	Eastern	Central	Western
96% Si, 2% Fe	18.50	19.85	21.60
97% Si, 1% Fe	18.00	20.25	22.00

Ferrosilicon Briquets

Contract price, cents per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si. 1 lb Si briquets.

	Eastern	Central	Western
Carload, bulk	4.80	5.05	5.25
Ton lots	5.80	6.40	6.70
Less ton lots	6.20	6.80	7.10

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
25% Si	15.00	15.65	15.90
50% Si	8.80	9.30	9.50
75% Si	11.20	11.50	12.25
80-90% Si	12.70	13.00	13.75
90-95% Si	14.35	14.65	15.35

Ferrochrome (65-72%Cr, 2% max. Si)

Contract prices, cents per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
0.06% C	25.00	25.40	26.00
0.10% C	24.50	24.90	25.50
0.15% C	24.00	24.40	25.00
0.20% C	23.75	24.15	24.25
0.50% C	23.50	23.90	24.00
1.00% C	23.00	23.40	23.50
2.00% C	22.50	22.90	23.00
65-69% Cr, 4.9% C	17.60	18.00	18.15
62-66% Cr. 4-6% C. 6-9% Si.	18.60	19.00	19.15

Briquets — Contract price, cents per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.

	Eastern	Central	Western
Carload, bulk	11.10	11.35	11.45
Ton lots	12.00	12.90	13.50
Less ton lots	12.40	13.30	13.90

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chrominum contained, lump sie, f.o.b. shipping point, freight allowed.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

	Eastern	Central	Western
Carload	18.70	19.10	19.25
Ton lots	19.90	21.20	22.00
Less ton lots	20.60	21.90	22.70

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

	Eastern	Central	Western
Carload	23.00	23.40	23.50
Ton lots	24.35	25.00	26.20
Less ton lots	25.35	26.00	27.20

Chromium Metal

Contract prices, cents per lb, chromium contained, carload, f.o.b. shipping point, freight allowed, 97% min. Cr, 1% max. Fe.

	Eastern	Central	Western
0.20% max. C	91.00	92.50	93.75
0.50% max. C	87.00	88.50	89.75
9.00% min. C	87.50	89.00	91.25

Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.

30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.

	Eastern	Central	Western
Carloads	15.50	16.00	18.05
Ton lots	17.60	18.35	20.50
Less ton lots	18.60	19.35	21.50

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, f.o.b. shipping point, freight allowed.

16-20% Ca, 14-18% Mn, 53-59% Si.

	Eastern	Central	Western
Carloads	16.75	17.25	19.30
Ton lots	18.85	19.70	21.45
Less ton lots	19.85	20.70	22.45

Calcium Metal

Eastern zone contract prices, cents per pound of metal, f.o.b. shipping point, freight allowed. Add 1.5¢ for central zone; 3.5¢ for western zone.

	Cast	Turnings	Distilled
Ton lots	$1.85	$2.70	$3.40
Less ton lots	2.20	3.05	4.20

CMSZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si. 1.25-1.75% Zr. 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

	Eastern	Central	Western
Ton lots	17.25	18.35	20.30
Less ton lots	18.00	19.10	21.05

SMZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed. 60-65% Si, 5-7% Mn. 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

	Eastern	Central	Western
Ton lots	15.05	16.15	18.10
Less ton lots	15.80	16.90	18.85

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, f.o.b. plant Niagara Falls, Washington, Pa. York, Pa., per pound contained W, 5 ton lots, freight allowed	$2.50
Ferrovanadium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V.	
Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Vanadium pentoxide, 88-92% V_2O_5 technical grade, contract basis, per pound contained V_2O_5	$1.20
Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb	
Ton lots	$2.50
Less ton lots	$2.55
Ferromolybdenum, 55-75%, f.o.b Langeloth, Washington, Pa., per pound contained Mo.	95¢
Calcium molybdate, 40-45%, f.o.b Langeloth, Washington, Pa., Per pound contained Mo.	80¢
Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo	80¢
Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo	80¢
Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y. ton lots, per pound contained Ti	$1.23
Less ton lots	$1.25
Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti	$1.35
Less ton lots	$1.40
High carbon ferotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton	$142.50
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. (Siglo) Tenn., $3 unitage per gross ton	$65.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Carload lots	18.40¢
Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy	
Carload, bulk	6.00¢
Alsifer, 20% Al, 40% Si, 40% Ft, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	6.50¢
Ton lots	7.00¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Car lots	9.00¢
Ton lots	9.75¢

Boron Agents

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed.

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.

	Eastern	Central	Western
Less ton lots	$1.30	$1.3075	$1.329

Manganese — Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max C.

Ton lots	$1.89	$1.903	$1.935
Less ton lots	2.01	2.023	2.044

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.

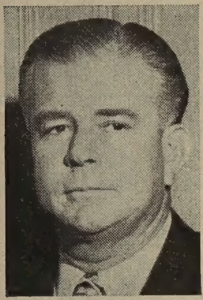
Less ton lots	$1.80	$1.8125	$1.8445

Silcaz, contract basis, f.o.b. plant freight allowed, per pound.	
Carload lots	37.00¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.	
No. 1	87.5¢
No. 6	60¢
No. 79	45¢
Bortram, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b., Suspension Bridge, N. Y., freight allowed, Ti 15—17%, B 0.90—1.15%, Si 2.5—3.0% Al 1.0—2.0%.	
Ton lots, per pound	8.0¢

D. N. Macconel Heads Machine Tool Group

Chicago

• • • At the twenty-third annual meeting of the American Machine Tool Distributors' Assn., held recently in Chicago, the following officers were elected to serve for the ensuing year: President D. N. Macconel, Machinery Sales Co., Los Angeles; vice-president, R. L. Giebel, Giebel, Inc., New York; second vice-president, O. W. Johaning, Colcord-Wright Machinery & Supply Co., St. Louis; and secretary-treasurer, C. C. Brogan, W. E. Shipley Machinery Co., Philadelphia.



D. N. MACCONEL

Members of the executive committee to serve until 1950 are George J. Keller, George Keller Machinery Co., Buffalo; W. W. Radcliffe, E. A. Kinsey Co., Cincinnati; and Edward F. Stauss, Stauss & Haas, New Orleans.

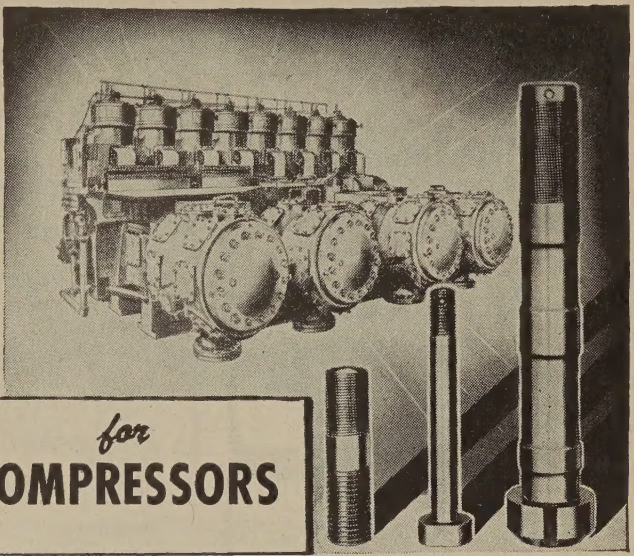
Buffalo Manpower Seen Tighter Than War Days

Buffalo

• • • **The industrial** manpower supply in the local area is tighter now than during the war, Leo A. Sweeney, district superintendent of the State Employment Service, declared here recently. He reported that on Sept. 1 only 8600 persons were seeking jobs of any kind through the agency's Buffalo office. This total represented a decline of 600 from Aug. 1 and more than 16,000 from Sept. 1, 1946.

The "quit rate" among newly hired workers of many of the larger production plants is reported abnormally high and some have to hire as many as 500 to make a permanent gain of 150 employees, while others report new workers quitting faster than they can be put on the payrolls.

The high separation rate tends to hold down production and some plants have extended their labor recruiting campaigns by advertis-



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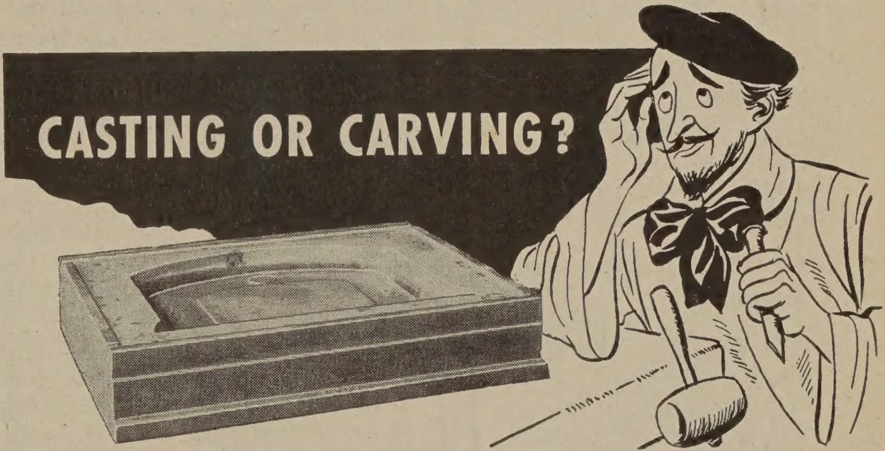

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ing for workers in other nearby cities. Due to the acute housing shortage in this city, however, the response has been poor. One plant even considered resorting to the wartime expedient of hiring women production workers, but discarded the idea.

The shortage includes non-skilled factory workers, as well as virtually all types of skilled workers, such as machinists, crane operators, millwrights, welders, and construction workers.

American Trade With Russia Evaporates As Lend-Lease Vanishes

Washington

• • • **Preliminary figures** compiled by the Census Bureau for the first half of 1947 indicate that American trade with Russia, now that lend-lease and UNRRA commitments have virtually been met, has dropped back to about the prewar status.

During the January-June period of this year, exports to the Soviet Union amounted to about $91 million (1.2 pct of total exports) while imports from that country aggregated $32.5 million (1.1 pct of total). This represents a decline of 60 pct in exports and 43 pct in imports.

A study of the census figures reveals, however, that although the totals declined sharply, the commercial part of trade with Russia rose considerably.

For the first half of 1946, only about 8 pct of the $223 million worth of shipments to Russia were on a commercial or for-cash basis, the remainder being made up of lend-lease (47 pct.) and UNRRA (45 pct) fulfillments.

On the other hand, January-June 1947 pipeline shipments of lend-lease and UNRRA dropped to 14 and 34 pct while commercial for-cash exports rose to 52 pct.

Slightly more than 70 pct of exports to Russia this year fall into the machinery and vehicle classification.

Some five general types of heavy machinery accounted for the bulk of export shipments to the Soviet this year. These were machine tools, $13.6 million; electrical machinery, $10.9 million; mining, well and pumping machinery, $9.2 million; power-generating machinery, $4.7 million; and, construction and conveying machinery, $4.1 million. Slightly more than $1 million worth of locomotives were shipped to bring the machinery-vehicle total to $64.2 million.

Undressed furs (51 pct of total) and metallic ores (28 pct) constituted the bulk of United States imports from Russia during the first 6 months of this year, also following the common pattern. However, the metal group accounted for a larger proportion of the total imports for the first half of this year than for last (13 pct).

Manganese was the largest single item imported, some 162 million lb, while $2.7 million worth of metals in the platinum group was received. There were no gold imports from the USSR during the 6-month period.

Sept. Freight Cars 7597

New York

• • • **Production of** domestic freight cars increased in September to a total of 7597, the American Railway Car Institute announced. The figure compares with 5963 in August and represents an increase of 154 pct over January of this year.

In announcing the figures for September, S. M. Felton, president of the institute, warned: "The outlook for steel deliveries, based on reports from car building plants, is discouraging both for the balance of this year and the first quarter of 1948.

"Unless there are increased shipments of steel the upward trend that has been consistent through the year cannot be continued."

Foam Rubber Capacity Up

Detroit

• • • **Goodyear Tire** & Rubber Co., Akron, Ohio, is making a substantial increase in its plant capacity for producing foamed liquid rubber and vinyl plastics, as announced by E. J. Thomas, president.

Foamed liquid rubber is used for chair cushions, mattresses, and automobile seats. It can be molded into any desired shape and thickness. Vinyl plastic is made into film, sheets and other materials for furniture coverings.